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THE MEDICAL ASPECTS OF AEROPLANE ACCIDENTS.*

BY

H. GRAEME ANDERSON, M.B., CH.B., F.R.C.S.,
TEMPORARY SURGEON R.N., ATTACHED ROYAL NAVAL AIR SERVICE;
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In the early days of flying there were necessarily many accidents, owing first to structural weaknesses in the aeroplanes and secondly to the fact that the pioneer pilots had to experiment and were mostly unacquainted with many of the factors governing aërial navigation. When man began to teach man, and as improvements in the construction of aeroplanes increased, so accidents diminished in number proportionately; but, on the other hand, many more took up flying, and the total of accidents was increased. The pre-war methods of teaching were slow and sure, and first solo flights were made in stages, and after prolonged tuition, thus tending almost to obviate accidents altogether. As the war advanced and the importance of aviation was recognized more pilots were needed and the methods of teaching had to be accelerated; after a few hours' dual-control instruction, pupils were sent off to do their first solo flights. Naturally many more accidents occurred, and as nowadays tuition is on faster and more powerful aeroplanes, so have the total number of accidents increased. Every accident teaches something new, and all should be investigated thoroughly, so that a preventable cause or error can be eliminated in the future. In this connexion the reports of the Public Safety and Accidents Investigation Committee of the Royal Aero Club are very instructive and should be studied.

The total number of accidents due to school work and experimental flying is greatly augmented by the number due to war flying, either the result of aërial duels or anti-aircraft fire from the ground.

An attempt has been made to classify accidents at this station covering a period of six months, and these are referred to as the "V" series. In a general review of accidents I have also drawn from fifteen months' experience whilst at another school, and these are referred to as the "E" series.

In the "V" series during six months 4,000 hours' flying were done, consisting of 9,000 flights, and during that time 58 aeroplanes were wrecked or crashed. The suggested definition of a crash is an aeroplane so damaged in a flying accident that it has to be deleted or sent into the workshops for repair or rebuilding. This is in contradistinction to the effects of a bad landing or get off where the ensuing damage is small and can be repaired by the flight mechanics. Fifty-eight crashes in 9,000 flights represents one crash in every 155 flights. In these 58 crashes 16 airmen were injured, which is equivalent to 28 injuries in every 100 crashes, or one pupil injured in every 560 flights.

From these figures one can see that school flying is fairly safe and compares favourably with other high velocity forms of transit.

From this list of 58 crashes the following table is compiled to show the frequency of crashes and injuries on early solo flights:

No. of Solo.	No. of Crashes. With Injury to Pilot.	Without Injury to Pilot.	Total.	No. of Solo.	No. of Crashes. With Injury to Pilot.	Without Injury to Pilot.	Total.
1st	1	8	9	8th	0	1	1
2nd	5	4	9	9th	0	2	2
3rd	1	3	4	10th	0	1	1
4th	0	3	3	12th	1	1	2
5th	1	2	3	After 10 hrs.	2	12	14
6th	0	1	1	Dual control	1	0	1
7th	3	5	8				
Total					15	43	58

The table shows a greater frequency of crashes on the first and second solos, then a diminution from the third to the sixth inclusive, and a rapid rise again on the seventh. The inference suggested is that by the time the pupil arrives at his seventh solo he becomes over-confident and a little careless.

CAUSES OF AEROPLANE ACCIDENTS.

The causes of aeroplane accidents are: (1) defect in the aeroplane; (2) error in judgement in flying; (3) "loss of head"; (4) brain fatigue or lethargy; (5) fear; (6) physical illness; (7) unavoidable causes.

In an analysis of the 58 crashes in the V series the following table shows the frequency of these causes:

Cause.	Number of Crashes. With Injury to Pilot.	Without Injury to Pilot.	Total.
1. Aeroplane defect:			
(a) Breakage	1	0	1
(b) Engine failure... ...	—	—	—
2. Error of judgement	4	38	42
3. Loss of head	6	1	7
4. Brain fatigue	3	1	4
5. Fear	0	0	0
6. Physical illness	0	0	0
7. Unavoidable	1	3	4
Total	15	43	58

1. *Defect in Aeroplane.*

This implies mechanical failure of some part of the aeroplane, and can be subdivided into (*a*) breakage in the air, and (*b*) engine failure.

(*a*) *Breakage.*—In the early days of aviation breakage or giving way in the air of some vital part of the aeroplane—for example, the folding back of a wing—was fairly common, and was due to faulty design or weakness in construction. Happily, to a great extent this has been corrected, and at the present time very few accidents are due to this cause. In three years' experience with the R.N.A.S. I have not seen a machine actually break in the air. In one case in the E series an elevator control wire jammed and caused the aeroplane to nose-dive, with fatal results to both occupants.

(*b*) *Engine Failure.*—Engine failure *per se* may be a direct cause of an aeroplane accident—for example, if the engine fails just as the aeroplane is leaving the ground, and there is unsuitable landing ground, the pilot may not have sufficient height or air space to avoid obstacles in front. Or in landing the pilot may find in his glide downwards that he has undershot or overshot the mark and his engine will not "pick up" or respond to carry him on further to suitable landing ground.

On the other hand, engine failure may not be a direct cause but may be a strong contributory or indirect cause of an accident. In all cases if the engine fails in the air a forced landing is compulsory, but given a fair height—2,000 ft. or more—the pilot can usually select a good field for landing and arrange his descent accordingly. Of course, on approaching the field to land it may be found not quite so good as imagined from a greater height—for example, sloping ground, long grass, etc.—and thus the pilot may make an error of judgement on actually landing. This quite often occurs with a pupil, but rarely with an experienced aviator, who knows exactly how to "pancake" his machine. But even in the case of experienced aviators, engine failure just after leaving the ground is a strong contributory cause to the real cause of an accident—namely, an error of judgement in flying. Authorities cite as one of the commonest examples of aeroplane accidents engine failure just after leaving the ground, when the pilot tries to turn back to his original starting-place loses height in the turning, and, in trying to prolong his glide, loses flying speed—stalls—and the aeroplane falls to the ground out of control. In the V series engine failure was the direct cause in one case, and was a contributory cause in two cases.

* Abstract of an article published in the *Journal of the Royal Naval Medical Service*. January, 1918.

2. *Error of Judgement.*

Error of judgement in flying is the commonest cause of aeroplane accidents. This error may occur in getting off the ground, in the air, or on landing.

Of the 58 crashes in the V series this cause accounted for 42—4 in getting off the ground, and 38 on landing. Of the many examples of error of judgement in flying perhaps the commonest is when, on landing, the pupil misjudges his distance from the ground, and either "flattens out" too soon and "pancakes," with a possible crash depending on the height, or else "flattens out" too late, and strikes the ground at a varying angle, usually overturning and wrecking the machine. Other examples in the air are putting on too much "bank" with insufficient "rudder" or vice versa; climbing on a turn; and, as in engine failure, prolonging a "glide" so that the machine loses flying speed.

It is difficult to estimate and account for these errors of judgement. In some cases it may be due to under-instruction. In other cases, even after prolonged instruction, the pupil may still misjudge distances, and on examination one occasionally finds that his standard of vision is below normal; but, on the other hand, he may be found physically fit, with normal vision and good balancing power. In the latter cases it may be a question of delayed reaction time, especially the visual reaction time on which the aviator is so much dependent. Normally this reaction time takes $\frac{10}{100}$ or $\frac{20}{100}$ of a second. It may be delayed by fatigue, drugs, and excesses, but, on the other hand, in some individuals who are otherwise physically fit, it is found to be much slower than in others. Hence, in the selection of candidates for aviation the visual and other reaction times must be up to the normal standard. By the French medical authorities on aviation candidates are rejected if the reaction times are found to be of the delayed type.

3. *Loss of Head.*

Loss of head occurs fairly frequently in a greater or less degree, and accounts for a fair proportion of accidents—7 in the present V series. The pupil in his new occupation of flying for the first time has all his mental faculties on the alert, at extreme high tension; the sense of danger, although not asserting itself, is ever-present, but subconscious. Under the sudden strain of an emergency his power to reason and act synchroncusly may momentarily lapse, resulting in what is known as loss of head. In a critical position the pupil has to think, decide, and act quickly, but with loss of head the mental balance becomes upset: there is no mental inertia, but the wrong decision is taken and acted on. In flying, seconds and parts of a second count enormously, and may mean all the difference between safety and danger. After actual loss of head there is seldom time to correct the error made. As examples of loss of head in the air the pupil in an emergency may move the throttle the wrong way, may keep his engine full on when he should throttle down, or may switch off his engine at a moment when he requires all the flying speed possible. Loss of head is very much allied to the two following causes.

4. *Brain Fatigue.*

In contradistinction to loss of head, the pupil in brain fatigue reaches the stage where he has neither the power to reason, decide, or act. A state of mental inertia supervenes. This is due to repeated stimuli received by his brain in rapid succession in his flight—he feels alone; a succession of errors occur in the air; he feels he cannot manage to control the aeroplane; fear does not seize him, but the enormity of the whole thing appals him; he feels helpless, and a state of brain fatigue occurs in which he, in a stupor, awaits events and takes little part in the aeroplane's control. After a careful study of 100 of the first solo flight confessions of pupils, and of many pupils who have had crashes, I am convinced that brain fatigue is a cause of a fair proportion of accidents. Four occurred in the 58 of the V series. As a rule, in brain fatigue the pupil fails to flatten out, and the aeroplane strikes the ground at its gliding angle and becomes wrecked. On questioning a suspected case of brain fatigue immediately after his flight, one finds usually that there is very little recollection of what happened during the flight; memory seems to become partially stunned. It is difficult to make a diagnosis of those liable to brain fatigue. As a rule, if it occurs, the pupil, even should he escape injury, soon gives up flying. He is not of the temperament suitable for flying. As a preventive, the pupil's first few solo flights should always be of short duration.

5. *Fear.*

Fear, at least in a degree sufficient to disturb one's flying, is rarely experienced in the air on the first few solo flights, whatever the sensations may be before going up or in the intervals between flying. The mind is far too much occupied and concentrated on details of flying, watching the various instruments that record air speed, height, levels, and engine's revolutions, and in judging position and direction in the air relative to the ground. From an analysis of the confessions of the first solo flights of 100 pupils and of my own, it is curious to note that very few experience fear in the air, at least not in a degree sufficient to disturb flying. Many confess to a sense of danger lurking somewhere at the back of the head, but say that it rarely if ever asserts itself. In the V series no crash occurred through fear.

6. *Physical Illness.*

In the series of crashes under consideration none was attributable to physical illness. At an air station medical inspection of the pupils and pupils at regular intervals reveals any organic disease that might lead to loss of consciousness in the air.

Flying on an empty stomach may cause faintness in the air. In schools flying commences at dawn, and all pupils are provided with a good meal of cocoa, tea, bread-and-butter. Similarly on long flights pilots are provided with tabloid forms of nourishment. The effects of cold and fatigue may produce faintness or stupor in the air. There are many instances on record of pilots fainting in the air either through being wounded or from high altitude effects. Some have been known to recover consciousness before reaching the ground and to make successful landings. Two pupils in the E series suffered from attacks of malaria in the air, and both were made to discontinue flying. Another pupil in E series, although slow to learn, was making fair progress, but one day he was noticed to descend rather steeply; he made no attempt to flatten out, the aeroplane struck the ground at its gliding angle, and the pilot was thrown out, clear of the machine, a distance of 66 ft., and escaped with only a slight sprain of one ankle. A few days later in the wardroom this pupil was seized with a series of typical epileptic fits. On inquiry a history of epilepsy for the previous five years was elicited. This was undoubtedly a case of an epileptic fit taking place in the air.

7. *Unavoidable Causes.*

From time to time unavoidable accidents arise. Every precaution is taken at a flying school to prevent collisions in the air or on the ground. Set signals are made with regard to the direction of circuits and landing areas for different flights. The terrain in certain areas may be unsuitable and conceal obstacles; again, in some aeroplanes the view of the sky or ground in certain positions may be limited. These conditions may cause unavoidable accidents. In the V series four accidents were unavoidable. Two were due to bad terrain with obstacles concealed in the grass; in the case of the other two a collision took place in the air.

Type of Accidents.

The term "type of accident" has been suggested to describe the part of the flight in which the cause of the accident was initiated. It is possible to make an arbitrary division of a flight into three parts: First, the getting off the ground into the air up to 50 or 100 feet; second, in the air, with the various turns, figures of eight, climb, spirals, etc.; and, third, the landing, which includes the descent from the time the throttle is closed to the time the aeroplane is brought to a standstill on the ground.

The following table gives an analysis of the types in the V series:

Type of Accident.	No. of Crashes.		
	With Injury to Pilot.	Without Injury to Pilot.	Total.
1. In getting off	4	6	10
2. In the air	2	0	2
3. In landing	9	37	46
Total	15	43	58

Some of the errors which the pupil may make in getting off are raising the aeroplane's tail too high, slewing to one side, or getting off with one wing down. In the air a pupil may lose flying speed or stall, or may sideslip or spin. The commonest

type of accident is in landing—the pupil's *bête noire*. He may either flatten out too soon, lose flying speed some feet from the ground, and the machine "pancake," or else he may be too late in attempting to flatten out, and the aeroplane strikes the ground at an angle, turns over, and is wrecked.

Scheme for First Aid at an Air Station.

The sick-bay or dressing station should be in full view of the aerodrome, with a look-out man supplied with field glasses always on duty during flying hours. Should the dressing station not be situated on the aerodrome, the former should be connected by telephone to the look-out man, whose position commands a good view of the flying area. Immediately a crash or false landing occurs, the look-out man telephones to the sick-bay notifying the steward the exact site of its occurrence. A map of the aerodrome, numbered in quadrants, can be conveniently arranged in the sick-bay. The look-out man then leaves his post and proceeds to the scene of accident, taking the wheeled hand stretcher, on which is carried a first aid dressing bag and an emergency tool kit case. The latter consists of an oblong box containing the following:

1. Two crowbars.
2. Two strong wire cutters.
3. Saw.
4. A long stout knife.
5. A hammer.
6. Strong cloth cutting scissors.
7. A fire extinguisher.

The above set of implements is very necesary, as in some crashes where the pilot is pinned under the wreckage it may be difficult to reach him. An injured aviator should never be dragged out of a crash unless in the case of fire, but rather the wrecked machine should be cut away from him. In many cases this prevents simple fractures from being converted into compound ones. The steward on being notified of an accident dispatches the ambulance, which stands always in readiness by the sick-bay, to the scene of the accident. The ambulance should be provided with twin wheels aft in order to facilitate movements on soft earth, etc. Two sick berth attendants go with the ambulance, and with them is a bag containing the following articles:

1. Morphine solution and two Wildey's hypodermic syringes.
2. A bottle of chloroform and face mask.
3. Brandy.
4. A bottle of sterilized water.
5. Six first-aid field dressings and slings.
6. Picric acid dressings.
7. A tourniquet, cloth cutting scissors, and a knife.

These articles can easily be packed into a small bag 10 in. by 8 in. by 3 in. The surgeon on duty is on the aerodrome during flying hours, and proceeds to the scene of the accident by car or foot. If the accident is at a distance, a mile or more, it is better to go by aeroplane. I have now gone by air to over thirty forced landings and accidents at a distance, and am convinced of the utility of this method in arriving quickly and not otherwise tired and out of breath after a long run. In discovering the site of forced landings and accidents at a distance from the aerodrome much depends on the condition of the country around. Should this be flat country, these accidents are fairly easily discovered, but in some flying schools the surrounding land may be uneven, intersected with dykes and high-hedged roads. Thus it may be extremely difficult for the search party to find the wreck. Officers and flight mechanics sent to the scene of accident should be trained in first aid with special reference to aeroplane accidents. Flying pupils should not be allowed to come near or help, except in exceptional circumstances.

Often the crash is so severe that the wreckage has to be cut away from the injured aviator. In other cases the machine is upside down, with the pilot held head downwards by his safety belt. The latter must be cut and the pilot slid gently out. The emergency tools are used to cut wires, remove wreckage, and lever away the heavy parts—for example, the engine—and thus easily to reach the injured person. The aeroplane seat cushion is taken from the machine and placed under the injured pilot's head, while his body rests on a flying coat spread out on the ground. A rapid examination is carried out to determine the injuries received. If the injured person is conscious and in much pain morphine should be injected and he should be conveyed quickly to the dressing station, where clothes can be cut away, injuries examined, and treated accordingly. If unconscious, some cutting away of clothing can be done on the field, injuries examined, and perhaps a dislocation reduced or a fracture accurately diagnosed during the unconscious period. In cases of fire, unless the pilot is thrown clear, the extinguishers must be used; but if there is any wind blowing they are of little use, as an aeroplane on fire is destroyed completely within a few minutes. The pilot's leather clothing for a time usually protects the body, but the face and lower limbs rarely escape. As the pain is so severe, and this applies to other injuries apart from those caused by fire, it is better to give chloroform on the field, and this is kept up on the way back to the dressing station. Morphine should also be given, but it takes some time to act.

Some Factors Relative to Aeroplane Accidents.

The injuries sustained are akin to most high velocity accidents, but are usually more severe as greater speed is used in aviation. They are composed of—

1. Injuries due to crushing, where some part of the pilot's body gets crushed between parts of the wrecked aeroplane. Crushing injuries are very severe in nature and mostly fatal in the propeller type of aeroplane (engine behind).
2. Injuries due to collision with the ground, as when the pilot is thrown out, or hits the ground with his head in turning over in and with the aeroplane.
3. Injuries due to impact with different parts of the aeroplane, as when the head is violently jerked forward and strikes the edge of the nacelle on the aeroplane's impact with the ground. Flying débris, such as broken struts and wires, may cause local impact injuries.
4. Injuries from fire.
5. Drowning and immersion effects in seaplane work.
6. Suspension effects, as when the pilot is suspended head downwards in an overturned aeroplane and is unable to loosen his safety belt. In many crashes the sudden impact of the pilot's body on the safety belt causes abdominal injury.

The injuries sustained vary a good deal, and depend on the type and power of the aeroplane and the cause and type of accident. An experience of three years attached to the Royal Naval Air Service impresses me more and more with the element of luck which befalls pilots in crashes. The present-day school aeroplane is much stronger in construction and more powerfully engined than in earlier days, thus providing for a greater margin of error on the pupil's part. The propeller type of school machine (for example, the Maurice-Farman) is considered very safe. It can be landed slowly, and has a powerful engine to cover errors. In a crash it has a strong under-carriage and a great deal of woodwork to absorb the shock before actual injury occurs to the pilot. On the other hand in a nose dive in this type of machine the engine, being behind, is likely to crush the pilot severely, and this usually proves fatal. In tractor machines the engine in front takes most of the shock in a crash, but the observer's seat just behind the engine usually gets telescoped or crumpled sideways. The pilot's seat, which is behind these, usually escapes crushing effects. If the pilot receives injury, this occurs either from his being thrown out or from his head being violently jerked forward and hitting the nacelle edge, windscreen, or instrument board. Should the safety belt hold, the sudden impact of the pilot's abdomen and lower part of chest against it may cause internal injuries. Nowadays most nacelle edges are padded, and safety belts are stronger and broader.

Safety Belts.—With regard to the use of safety belts, endless discussion has taken place amongst aviators. My own opinion is that before leaving the ground all aviators should see that their safety belts are fastened and should be familiar with the method of their quick release. The belt should never be undone in the air. Thus the pilot, in the event of fainting, losing consciousness, or being wounded, or encountering gusty and bumpy weather or fog, has a safeguard to prevent him either being thrown out in the air or thrown forward on to his control lever (thus causing the aeroplane to nose-dive), or having his feet jerked off the rudder bar (thus losing steering power). I think all are agreed on the above, but the difficult question arises whether to release the belt near the end of a glide before landing. This I would advise in the propeller type of aeroplane, but in the tractor machines it remains an open question.

Certainly if the aeroplane catches fire in a crash little hope can be entertained of the pilot if he be strapped in. Safety for him depends on his being thrown out clear of the machine. A narrow belt is to be condemned. The

ideal safety belt should be broad and resilient, attached to the framework of the aeroplane and not to the pilot's seat, should be made to release easily and quickly, not at the centre of the pilot's body but at the side where it is attached to the aeroplane. This release should be effected by means of a small hand lever. It is advisable for all pilots to carry a stout knife in the outside pocket of their flying coat in order to cut the belt should they be held in upside down after a crash.

Safety Helmets.—These are of undoubted value in school work and should be worn by all pupils. They should fit properly and not be easily dislodged whilst flying. The modern ones are much lighter and less high in the crown than the earlier ones used. In a crash they certainly prevent scalp wounds from broken struts and wires and the side flaps protect the ears from injury. Over and over again I have seen pilots thrown out who owe their escape from more or less serious head wounds to their safety helmets.

On the other hand, in a turn over, the added height of the crown may catch the ground and wrench the head either forwards or backwards, causing fracture dislocation of the neck, or severe strain and possible rupture of the muscles of neck and back.

As pointed out by Fleet Surgeon Wells, an ideal safety helmet would take its support from the shoulders.

Goggles.—Most aviators wear goggles, but there are still some who prefer to fly without them. I know of one instructor who, after a year continuously instructing pupils and wearing no goggles, began to suffer from a form of conjunctivitis. I certainly think that goggles should always be worn. There is no doubt that flying without goggles is apt to set up a spasm in the eyes which in the long run is bound to do harm. Triplex or non-splintering material is now almost universally used instead of glass in the manufacture of aviation goggles. Thus rarely in a crash do we get any injury to the eyes. The nose-piece connecting the two lunettes should have no metal in its composition. I have seen some cases where wounds of the nose were caused by the metal connecting part of the lunettes.

Accidents under Dual Control.—Accidents under dual control are not common, as the instructor has usually time to correct in the air any of the pupil's errors in flying. One occurred in the V series, and was unavoidable owing to the character of the ground. In the E series three occurred. All dual control machines should be fitted with a mechanical device for throwing out of action quickly the pupil's control of the machine. I have seen three other crashes under dual control but without injury to either instructor or pupil.

Fatal Accidents.—In two years of school work I have only seen three fatal accidents occur in roughly 200 crashes. Four deaths occurred, of which three were instantaneous and one after four days. All were due to multiple injuries.

ACUTE YELLOW ATROPHY IN SYPHILIS.

(A Preliminary Note.)

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During the past two months I have had the opportunity of studying in the *post-mortem* room no fewer than five typical cases of acute yellow atrophy, an experience which must be almost if not quite unique. Though numerous examples of subacute types of the disease have been recorded in recent years, and particularly in munition workers, typical cases of the classical icterus gravis are seen only at long intervals. According to Best[1] (1903) only some 500 cases of acute yellow atrophy were on record at that time.

In a personal experience of over 5,000 *post-mortem* examinations performed since 1898 I have only investigated one other case. The present series of five cases have all occurred in syphilitic subjects in the course of, or subsequent to, treatment by "salvarsan" preparations and mercury; and considering the number of cases of syphilis now being treated throughout the country, a searching analysis of these fatal cases would appear to be urgently called for to determine, if possible, the relative parts played as etiological factors by the syphilitic toxin, arsenic, and possibly some other exciting agent.

I do not propose in this communication to describe the details of the observed cases, these being reserved for a later and fuller joint report, but would content myself at present with a brief summary of the essential facts.

In practically all the cases a full course of intravenous injections of salvarsan had been given, coupled with the usual intramuscular injections of mercury. Needless to say, in each case the diagnosis of syphilis was not only clear on clinical grounds, but was confirmed by a Wassermann test. These cases were not of undue severity, and indeed showed no special symptom of importance till a sudden onset of jaundice was noticed, without at first any special disturbance, the disease suggesting nothing more than an ordinary catarrhal jaundice.

At a varying period of from two to eight days, however, acute symptoms appeared with dramatic suddenness. They were ushered in by a period of wild excitement and increased icterus, with haematemesis. The patients rapidly passed into a condition of deep coma, and death occurred in the five cases at periods of one to four days from the onset of the acute symptoms.

The urine was markedly bile stained, and in each case showed tyrosin; in some leucin was also demonstrated. In four of the cases diminution in the size of the liver was demonstrated during life.

These cases, then, presented clinically the classical symptoms and signs of icterus gravis of a degree of acuteness which is seldom seen. The morbid anatomy and histology of these cases were equally striking and equally characteristic, the appearances being practically identical, and varying only in degree. To summarize the *post-mortem* results, there was in each case great diminution in the size of the liver, which varied in weight from 27 to 43 oz. Histologically there was the usual intense necrosis rather than a fatty degeneration of the liver parenchyma, the bile duct epithelium largely escaping; there had been, of course, no time for liver-cell regeneration, but a definite inflammatory reaction was present. Though "red" areas were macroscopically apparent in the liver, the condition has been so acute that in most cases the "yellow" areas preponderated. It is to be noted, however, that the naked-eye appearances give no adequate indication of the extensive changes found microscopically. In each case there has been widespread haemorrhages in the serous membranes with a special haemorrhagic infiltration of the lungs. The kidneys, in contrast with the liver, have shown an intense degree of fatty change, with, in some instances, definite signs of an inflammatory reaction. There has been constantly noted also a varying degree of intestinal catarrh.

Bacteriological examination has, in contrast to what has been hitherto found in similar cases, yielded some interesting results which may prove of prime importance in relation to the etiology of the condition. Cultures from the heart blood and lung have given copious growths of organisms apparently of the *coli*-typhoid group, with some definite cultural characteristic features and pathogenic properties (in two at least out of the three strains tested so far). I am unable to say more at present, as their cultural and biological reactions are still being investigated, and as the bacteriology of acute yellow atrophy has hitherto been so indefinite, one must be chary of attaching too much importance to their presence without some experimental evidence of an etiological relationship with the disease. One may be permitted, however, to review briefly the present opinions as to the causation of acute yellow atrophy, or rather acute necrosis as it should be called, and to note how the various hypotheses which have been advanced would apply to the present group of cases. In 1908[2] I endeavoured to summarize the current views at that time from a study of an acute case, and a series of subacute cases which I had personally observed, and particularly from a series of cases which had been observed in that year in Germany and America.

To quote from that paper, I stated

that there is much to be said in favour of the view that in the causation of acute yellow atrophy we have two factors at least at work. It may well be that the typical condition is

only produced when some special virus acts on a previously damaged liver;

and again,

that the most reasonable view to take would appear to be that the essential cause of acute yellow atrophy is some poison, possibly of microbic nature, produced in the alimentary tract and acting on a liver previously damaged, or whose function at least has been disturbed.

I do not, of course, claim originality for this view; it has been held by others, no doubt, both before and since. I only present it again as a working hypothesis.

The damage to the liver may be produced, as we know, by metabolic poisons—for example, in eclampsia and allied conditions—and there is now abundant evidence that syphilis may in the same way be an essential factor in paving the way for the development of acute yellow atrophy in another group of cases. That syphilis produces definite changes in the liver is common knowledge. The existence of gummata and cirrhosis in both congenital and acquired syphilis is common, but it is apparently not so widely recognized, except by those who are treating large numbers of cases of syphilis, that jaundice is not so very uncommon. According to various authorities, it would appear to occur in from 1 to 2 per cent. in cases treated in the German clinics.

It has also been long recognized that syphilis is not an uncommon precursor of typical acute yellow atrophy, and was noted long before salvarsan was ever used as a curative agent. In 1898 Richter collected 41 cases, and, though later Veszpremi and Kanitz,[5] in a criticism of Richter's observations, cast doubt on the presence of syphilis in ten of these cases, numerous observations on acute yellow atrophy since leave no doubt that syphilis has been present in a very large number of instances. In another group of cases, poisons not of microbic nature have fallen under suspicion; thus phosphorus, arsenic, mercury, chloroform, and, in quite recent years, trinitrotoluene and tetrachlorethane, have been shown capable of producing changes in the liver which are comparable at least to those seen in icterus gravis. An analysis, however, of most of these cases reveals certain differences from the *post-mortem* findings in typical acute yellow atrophy either in the histological or chemical results of investigation of the liver or in the rapidity with which the condition develops. Thus, in the case of phosphorus and delayed chloroform poisoning, though the symptoms may closely simulate those of acute atrophy, there is a degree of "visible" fatty change which is not apparently seen in the classical acute atrophy, as was pointed out by Sir H. J. Stiles and myself[4] in a paper on delayed chloroform poisoning in 1904. Tiletson[5] has recorded a case of acute atrophy, apparently resulting from mercury, where syphilis was not present. I have only found one definite reference to arsenic as a causal agent.

Severin[6] in 1912 described cases of acute atrophy in syphilitic cases under treatment by salvarsan, though Wells[7] (1914) refers generally to such cases, and doubtless an examination of recent literature, to which I have not access at present, would reveal other examples.

Fresh interest in the subject has been stimulated since the outbreak of war by the study of toxic jaundice in munition workers, in whom a large number of cases of jaundice have been observed. In 1916, 181 cases occurred in T.N.T. factories in this country alone, with 52 deaths. The subject was discussed at the Royal Society of Medicine in January, 1917,[8] and the Medical Research Committee has recently issued a monograph on the subject, which I have not yet seen.*

The trinitrotoluene, according to the investigations of Dr. B. Moore, appears to be largely, if not entirely, introduced into the body through the skin, and the *post-mortem* results reveal a condition, as M. Stewart states, somewhere between subacute atrophy of the liver and portal cirrhosis. One case, however, which he describes, though not in detail, in his contribution to the discussion at the Royal Society of Medicine, would appear in its clinical course and morbid anatomy to be indistinguishable from a typical case of acute yellow atrophy.

It may be remarked that these cases occurred particularly in munition workers who had shown definite symptoms of toxic gastritis, and it is possible that even in them the gastro-intestinal catarrh is in some way associated with a secondary intestinal infection, acting on a previously damaged liver. *Post-mortem* examinations in these, for the most part subacute cases, might not reveal the microbic invasion which has been so marked in the present series. Still less likely would *post-mortem* examination throw much light on the etiology of the by no means inconsiderable number of cases of subacute atrophy which occur for the most part in children without any previous history of "poisoning" or infection.

These cases have not till comparatively recently been widely recognized, in this country at least. In 1908, together with Dr. Lindsay S. Milne,[9] I published a series of five such cases in which the clinical histories and *post-mortem* appearances left no doubt as to their true nature, but owing to the longer clinical course run, little light could be thrown on the primary cause of the condition.

In still another group of cases, namely, undoubted septicaemia from various organisms, appearances in the liver simulating typical acute yellow atrophy are sometimes observed, but a critical study of such cases reveals some differences from the conditions observed in the so-called idiopathic acute atrophy.

The bacteriology of acute yellow atrophy has so far been very indefinite. This is easy to understand when one remembers that the liver is endowed with special functions for resisting microbic invasion from the alimentary canal. The Kupfer cells lining the sinusoids in the liver have, as we know, a powerful phagocytic action, and it is difficult to imagine that such a mass of highly specialized and actively functioning tissue as the liver presents is not intimately concerned with immunity processes in general. If anything, then, of a toxic nature acts on the liver, as is evidently the case in acute yellow atrophy, secondary microbic invasion is almost to be expected, and it becomes a matter of considerable difficulty to differentiate between a possible exciting agent of prime importance and a number of more or less harmless saprophytes, some of which may have entered the body after death. The isolation of the causal organism under these circumstances, if there be one, must not be expected to be an easy matter.

That infection of some kind apart from syphilis plays some part in the etiology of acute atrophy has long been held. In a large number of recorded cases some previous intestinal catarrh has been noted. The liver being so markedly affected in this disease, it has been justifiably held that the poison, whatever it may be, has been conveyed through the portal circulation.

In some cases *Bacillus coli* has been isolated *post mortem*; most observers, however, have regarded this as a condition without special significance and almost to be expected. Reichmann[10] in 1908 isolated from the blood a sporulating Gram-negative bacillus, but as it has no special pathogenic power he did not regard the observation as important.

Apart from intestinal infection in a number of cases, so-called influenzal attacks are supposed to have played some part in the causation of the disease. Miller[11] in 1908 recorded a case in which active pulmonary tuberculosis was present, and was inclined to think that the tuberculous toxins had some causal effect. It may be noted, however, that there was at least a strong suspicion that this patient was syphilitic.

Finally, to apply these various suggestions to our present series of cases:

We have here five typical cases occurring together in a limited period; all have been syphilitic subjects, and all have been treated with salvarsan preparations *plus* mercury.

It is remarkable that though similar cases amounting to thousands have been treated by the same methods, such a complication as we have recently experienced has not been observed until now. This would seem to point to some other factor having been introduced. There is no evidence at present that the salvarsan has materially altered, at least in the last three years, and the syphilitic toxin and mercury factors may be taken as constant. Together with this, we have the observation that in each case there was found at the *post-mortem* examination microbic infection of a special type.

There would appear at least to be a *prima facie* case for regarding this infection as being the new factor which, acting on livers previously damaged by the syphilis, and possibly arsenic *plus* mercury, has completed the damage

*Readers interested may refer to the official memorandum published in the BRITISH MEDICAL JOURNAL (December 16th, 1916, p. 842), which contains a section dealing with this subject.

to the liver cells, and allowed autolysis of the tissue, which appears to be the essential liver change, to occur. Some such combination of circumstances might account for the rarity of the disease.

It is evident that a very considerable amount of work from a histological, chemical, and bacteriological standpoint is necessary in the cases already observed. I am indebted for assistance to Mr. P. C. Laws, M.A., in investigating the bacteriology of the cases.

It should be noted that neither clinically nor pathologically do the cases observed bear any close similarity to cases of spirochaetal jaundice.

Professor R. A. Bolam, who has seen some of the cases during life, is engaged with some others on the clinical side of the problem, and we hope in the near future to describe the cases in detail, and to give our conclusions, based on a more thorough study than other pressing work has permitted till now.

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PERICARDIAL KNOCK.

BY

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THERE is a sound heard on auscultation in cases of penetrating wounds of the chest near the cardiac region which is unlike anything met with in civil practice. Its origin is, I believe, not yet established. The occurrence of this sound is now familiar to most of those who are dealing with these cases at the clearing stations. It is of the nature of a click, and varies from a faint sound heard by careful auscultation, to a noise which may be compared to that heard in the ear-piece of a telephone when the lever is moved up and down. It may be heard sometimes when standing at the foot of the patient's bed. Sometimes the patient is conscious of it, and on one occasion has himself called my attention to it. In nearly every case the sound disappears after forty-eight hours, although in one patient who was recovering from a chest wound without any complications the sound persisted for ten days. He was then sent to the base, and I have no further information about him. The sound has been, as a rule, most marked near the apex beat. It is usually double, corresponding to the heart sounds, and its intensity waxes and wanes with respiration, sometimes disappearing completely in full expiration. A distinct fremitus can be felt by the hand laid on the chest.

The first case in which I noted it was shown to me by Captain W. W. Rees, R.A.M.C. I then suggested that it was due to a shell fragment lodged where the pleura and pericardium are in contact. I thought this possible as I had previously heard a metallic rumbling sound in a case in which a shrapnel ball was seen by *x*-ray screen in the costo-diaphragmatic angle moving up and down with respiration. A skiagram in Captain Rees's case showed the fragment to be in the neighbourhood of the pericardium.

That this explanation was not the correct one was proved by the case of an officer shown to me by Lieut.-Colonel Newlands of the A.A.M.C. The characteristic sound could be heard when standing beside the patient's bed. The entry wound was outside the heart on the left side, and the track passed in the direction of the pericardium. Two days later a right-sided subphrenic abscess developed and was drained. The foreign body was found lying in the right side of the abscess cavity. An infected haemothorax was also drained. The patient died a few hours later, and at the autopsy a "shaggy" purulent pericarditis was present. This case showed clearly that the foreign body was not itself directly responsible for the sound.

In the next case I saw the foreign body was visible on the screen in the cardiac area. It moved continuously with the heart beat, so that a skiagram showed only a blurred image. This patient died, and at the autopsy the pericardial surface was normal. There was no infection, exudate, or any sign of pericarditis. The cavity contained a few drops of blood-tinged serum due to the passage of the missile, which had traversed the pericardium and lodged in the interventricular septum. This case, as also several others in which the "knock" disappeared after twenty-four or forty-eight hours in patients who never had serious symptoms, shows that pericarditis is not the cause.

I may note in passing that the continuous movement of the foreign body shadow with the heart beat, as distinguished from an oscillatory movement at certain phases of the respiratory and cardiac rhythm, has indicated that the foreign body is actually in the heart wall or cavity.

It has been suggested that the sound is due to emphysema of the connective tissue of the mediastinum, but in one case the missile passed through the chest antero-posteriorly on the left side clear of the upper and outer margin of the heart. Moreover, a case has been reported by Captain Rees in which the sound was heard over the apex beat, which was normal in position. It was heard in systole and was loudest in full inspiration. The foreign body was seen on the *x*-ray screen moving with respiration, and in full inspiration there was an oscillatory movement communicated to it by the cardiac impulse. There was a clear space of some 2 in. between the heart shadow and that of the foreign body. The entry wound was over the lower end of the left scapula. Localization of the foreign body on anatomical cross-sections showed it to be lying behind the root of the left lung in close proximity to the rami bronchiales, and over 1 in. from the nearest point on the pericardium. The man's condition when he was sent to the base was very good.

The usual disappearance of the sound after a short period, and the absence of serious symptoms in many cases, suggests that it may be due to air in the interstitial connective tissue of the lung which is struck upon by the beats of the heart. Further records will doubtless throw more light on the subject.

A SIMPLE APPARATUS FOR NITROUS OXIDE-OXYGEN ANAESTHESIA.

BY CAPTAIN A. S. WILSON, R.A.M.C.

THE infrequent use of nitrous oxide-oxygen as an anaesthetic for major operations in the British Expeditionary Force would make it appear that its very great advantages have not been fully realized. The rapid induction of anaesthesia and the immediate recovery are most important factors; with any general anaesthetic, the shorter the duration of its influence the better for the patient. Nitrous oxide is shorter than any other.

It is by far the most agreeable anaesthetic to take, and struggling and resistance are uncommon. Post-operative nausea and vomiting are hardly ever encountered; headache, restlessness, and bronchopneumonia are much less frequent sequelae than after ether or chloroform.

With reasonable skill and care on the part of the anaesthetist it is by far the safest general anaesthetic. Cyanosis under nitrous oxide, as under any other anaesthetic, is always a danger signal; when present, it is an indication that an insufficient proportion of oxygen is being supplied; such a mixture will never produce satisfactory relaxation, and usually results in muscular twitching and disturbed respiration. On the other hand, an excess of oxygen causes persistent movement, and prevents the onset of unconsciousness; such excess is frequently indicated by a red flush across the patient s forehead.

Desirable variations in the depth of anaesthesia to suit the requirements of different phases of an operation are much more rapidly and safely attained than with ether or chloroform. It is beyond the scope of this short paper to reiterate Crile's well-known findings on the physiological advantages of nitrous oxide as an anaesthetic.

Even after a prolonged administration, lasting up to two hours or more, the patient always completely recovers from the anaesthetic before leaving the operating table; this is invaluable when the number of post-operative cases is so large that it is impossible to provide a sister or trained orderly to stand by each patient till he is round

from the anaesthetic. During busy times at casualty clearing stations, when men are being rapidly evacuated, nitrous oxide anaesthesia allows of a patient being taken to the ambulance train immediately after operation.

Next to local anaesthesia it is the nearest to the ideal anaesthetic. In cases in which infiltration is insufficient nitrous oxide will be found a most useful and harmless adjunct; the analgesia which can be produced by hovering over the patient's face with the mask, supplying only a very gentle flow of nitrous oxide, is generally sufficient. It is not necessary to produce unconsciousness, merely a temporary "dissociation of ideas."

Nitrous oxide–oxygen is a perfectly suitable anaesthetic for any operation; there are no genuine contraindications.

It is advisable to employ the almost universal preliminary injection of omnopon, scopolamine, and atropine, one ampoule omnopon-scopolamine ($\frac{2}{3}$ grain omnopon, $\frac{1}{150}$ grain scopolamine) being given an hour and a half before operation, and another half ampoule with $\frac{1}{100}$ to $\frac{1}{150}$ grain atropine sulphate half an hour before operation.

In thoracic surgery the paravertebral injection of novocain solution will greatly reduce the amount of anaesthetic required. In abdominal surgery, local infiltration—on the lines of Crile's anoci-association—combined with nitrous oxide, will result in perfect relaxation of the abdominal wall.

Those who have wished to employ this form of anaesthesia may have been discouraged by the difficulty and discomfort of administration with the ordinary apparatus supplied. The apparatus I have constructed may appeal to them; with it I have been able to maintain anaesthesia, lasting in some cases over two hours, with a minimum of difficulty.

The apparatus has been used in all cases described in the paper on thoracic surgery by Captains Lockwood and Nixon,* in which local anaesthesia was found insufficient.

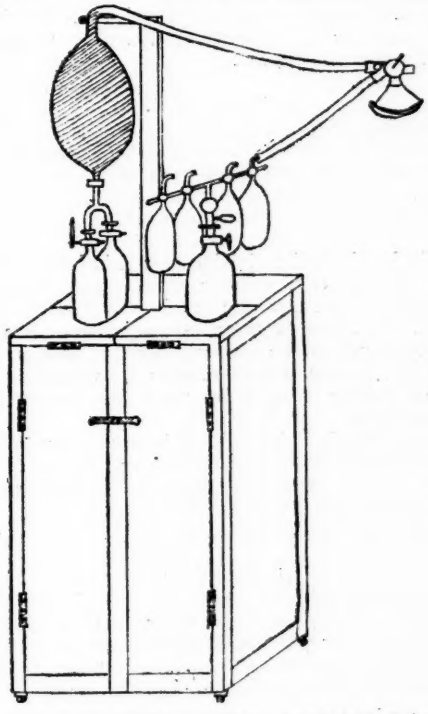

FIG. 1.—Apparatus fitted for working. The height of the cabinet is 2 ft. 6 in. and of the bracket 2 ft. 6 in.

The apparatus is assembled from materials available in any hospital, with the addition of a few minor items easily obtainable at a trifling cost.

It consists of a stand carrying two nitrous oxide cylinders (500 gallons each) and one 40-ft. oxygen cylinder in a vertical position, with a central upright for suspending the nitrous oxide gas bag, as shown in Fig. 1.

The nitrous oxide cylinders are connected direct to the gas bag by means of the delivery tube supplied for the ordinary foot stand. Gas passes from the bag through two lengths of "concertina" flexible tubing to the combined mixing chamber and face-piece of Hewitt's nitrous oxide–oxygen apparatus. The supply of nitrous oxide is conveniently controlled by a straight hand key on the cylinder valve; the flow of oxygen is regulated by a Haldane's oxygen apparatus, which provides a pressure-reducing valve and a convenient mechanism for varying the amount of this gas as required. One of the four delivery tubes is connected to the oxygen inlet on the mixing chamber by a single length of concertina tubing. It is advisable to surround the upper end and connexions of the nitrous oxide cylinders with hot-water bottles to obviate the danger of freezing at the outlet. The usual precautions are necessary to prevent leaking at the connexions, the two lengths of concertina tubing are joined over a short piece of metal pipe. The gas bag should be covered; a small landing net (obtainable anywhere at very small cost) will be found useful for this purpose.

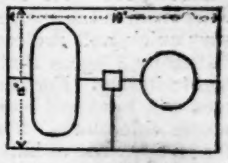

FIG. 2.—Diagram of arrangement of top; dimensions 12 in. from back to front and 18 in. from side to side.

The construction of the stand will depend entirely on the materials and labour available. It is a very great advantage to have it mounted on four strong castors, as this renders it perfectly mobile.

The form of stand shown will be found convenient and simple. Two separate compartments are provided: that for the nitrous oxide cylinders is lined with cloth or other suitable material to retain the warmth provided by two hot-water bottles hanging inside. Both compartments have side doors with hinged top extensions, which facilitate the replacing of cylinders. There is a bracket on the top of the central upright for attaching the upper end of the nitrous oxide bag.

Some difficulty may be experienced with the differently shaped cylinders which have been supplied to the British Expeditionary Force recently; they are shorter and stouter than those which were formerly distributed. It is impossible to link two of these newer cylinders together by means of the ordinary delivery tube as stated above. Pending the distribution of a suitable connexion (which is contemplated) it will be found convenient to attach one of the ends of the delivery pipe to a nitrous oxide cylinder and fix a temporary gas-tight plug in the other arm of the tube.

With the above apparatus I have found it possible to maintain anaesthesia on about 120 gallons of nitrous oxide and 20 gallons of oxygen per hour.

* This paper will appear in an early issue.

ANAESTHETICS IN MILITARY HOSPITALS.

BY

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HAVING now been administering anaesthetics for several years in hospital and private practice and daily for the last seven months at the Lord Derby War Hospital, Warrington, with 3,000 beds in the summer and 2,500 in winter, the following is my experience:

The patient is given as a preliminary morphine $\frac{1}{4}$ grain, atropine $\frac{1}{150}$ grain, half an hour before the operation. The preliminary injection of morphine and atropine is not only followed by less secretion of mucus and a quieter anaesthesia, but the patient usually sleeps for an hour or two after the operation, thus causing very much less trouble to the nursing staff—a great advantage in a busy hospital.

The anaesthetic mostly used by me is ether, preceded by chloroform. I use two separate masks, one covered with a layer of lint for chloroform and the other with two layers of lint for ether. By using two separate masks the danger of giving a mixture of unknown strength is avoided, and I almost invariably use the open ether drop method on a Schimmelbush's mask.

At the beginning of the administration I drop about one drachm of chloroform slowly on the mask, holding it an inch or so from the patient's face and quietly talking to him, or in nervous cases getting him to count. During this time the mask is lowered, until in about a minute

or so it is resting on the face. I then replace it by the ether mask and quickly drop on ether till the lint is saturated. Next I place a towel, two or three folds, over the mask to increase the concentration, leaving sufficient space to apply the anaesthetic continuously. By this method I rarely get any struggling and often not the slightest movement on the part of the patient, who is generally ready for the operator in three or four minutes. This ensures the maximum degree of safety, is certainly very quick, and preferable to beginning with ether alone. Patients all agree that the chloroform is pleasanter and less irritating. For instance, it is quite the rule for those men who have had both anaesthetics to tell me that they prefer chloroform. The average quantity of anaesthetic for an operation of half an hour is 2 drachms of chloroform, 3 oz. of ether. Occasionally it is very difficult to keep some of these young subjects under with the ether drop method alone, especially in abdominal cases, and it may be necessary to resort to a little chloroform or C.E. mixture for a short time and then resume the ether.

In my private and previous hospital experience I have administered nearly three thousand anaesthetics, the bulk by the method outlined, and have not had one fatal case or any serious difficulty.

In my early days I was taught to give ether by the Clover method, but now rarely use it, for to my mind the ether drop method is very much better, in that the patients very rarely get cyanosed, have less trouble with mucus, a quieter anaesthesia, and less sickness after the operation.

I have also introduced a Shipway's warm ether apparatus, and, in conjunction with my own methods, find it very useful in cases requiring prolonged administration, in that it conserves the body heat of the patient, and is also a saving of the anaesthetic.

Ethyl chloride and nitrous oxide have proved quite satisfactory for patients requiring a short anaesthesia such as for incisions and manipulation of joints.

I find, after giving anaesthetics daily in a military hospital, that it is quite different from administering them in a general hospital in peace. In the latter it is the exception to have a strong, healthy young man to anaesthetize, the majority of cases being women and children or men usually with a definite organic or inflammatory lesion and often well prepared for an operation. Military cases are frequently robust young men who have lived an outdoor life for varying periods and many of them have been in the trenches and subject to war strain and nervous exhaustion. I have also found that men suffering from shell shock require much more anaesthetic than other men and have a greater tendency to excitement whilst going under. In these cases a little encouraging suggestion during the first stage of anaesthesia not only helps during the administration, but is also beneficial afterwards. At first I was inclined to attribute this to the mode of living, which made them difficult to anaesthetize, but I am now convinced there is a nervous element to contend with. It is impossible in many cases to judge by the appearance of the men how they are likely to behave under an anaesthetic. Some of the apparently quiet and sickly-looking men take a large quantity of anaesthetic and become troublesome with excitement, whereas some of the rough-looking and vigorous need very little.

IN a short note Marcus W. Lyon (*Anatomical Record*, Philadelphia, 1917, xiii) records the case of a woman, aged 41 years, whose right kidney was absent, the left being hypertrophied. The right ureter was connected with the urinary bladder and contained a little calculous débris. The adrenals on both sides were in their normal positions. There was only one Fallopian tube and one ovary. The interest of the case is that the patient's maternal grandmother had been operated upon for some abdominal condition and that one kidney—it is not stated which—was found to be absent.

SURGEON B. J. LLOYD, of the United States Public Health Service, sanitary inspector under the Bureau of Medicine, in a recent report states that at Bremerton, Washington, where the Paget Sound navy yard is situated, and at Seattle, the neighbourhood swarms with prostitutes from all parts of the country. He recommends that the Navy Department should procure the enactment of a law declaring a general district, one hundred miles in diameter, surrounding every military and naval reservation. From this all undesirable persons should be excluded, and the most objectionable should be interned.

ON THE TREATMENT OF GUNSHOT WOUNDS WITH A SOLUTION OF SOAP AND WATER AND PRIMARY SUTURE.

BY

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SURGICAL SPECIALIST, No. — CASUALTY CLEARING STATION.

AT the suggestion of Colonel Cuthbert Wallace, consulting surgeon to our army, I commenced treating as many gunshot wounds as possible by primary suture, using instead of an antiseptic a solution of soap and water.

The solution used has been of the strength 1 in 40. Pure sapo durus (1 part), obtained in blocks, is cut into shavings and dissolved in hot water (20 parts) which has been previously boiled. When required for use the solution is mixed with an equal volume of sterile water.

OPERATIVE TECHNIQUE.

Superficial Wounds.

Superficial wounds are completely excised and soap solution well rubbed into the surface; they are then stitched up.

Single Penetrating Wounds.

The skin wound is completely excised, the exposed surface of the wound in the muscle cut away, and the track of the missile laid thoroughly open. The wound being held widely open with retractors, the surface of the track is cut away all round, *from the inside*, with scissors until all damaged muscle, as far as it is visible to the naked eye, is removed. Foreign bodies, clothing, or any small, loose fragments of bone, are removed, all bleeding points ligatured, and the whole wound thoroughly swabbed out with soap solution. Muscles and fasciae are closed with catgut and the skin sutured.

If the metal has passed almost through the thickness of a limb, it is removed by a counter incision and the wound converted into a seton wound.

Seton Wounds.

Both entrance and exit wounds are treated as above, and it is generally possible in this manner to expose and excise the whole track, one half from each incision. In cases in which this has been impossible for anatomical reasons the centre of the track has been well rubbed with gauze and soap.

If it only involved the division of a thin layer of muscle, the entrance and exit wounds were directly connected, laying open freely the whole track, which could then be dealt with. If there is gross loss of muscular tissue so that the ends cannot be approximated, or if a large dead space is left, the skin is sutured over the wound and a very small split rubber tube introduced for twenty-four to forty-eight hours.

In cases in which it is difficult to approximate the skin edges without undue tension one or more incisions may be made down to the deep fascia parallel to and at some distance from the wound. This occurs most often in the forearm and lower part of the leg.

Amputations.

Amputations have been completely stitched up with a very small split tube introduced into one corner for twenty-four hours. Penetrating wounds of knee-joints have been completely excised down to the synovial membrane, the joint well irrigated with soap solution, and the wound closed in layers.

Effect of the Soap Solution.

The effect of the soap solution on the wound appears to be haemostatic. Instruments, needles, etc., tend to become somewhat slippery—a slight disadvantage.

RESULTS.

During the last four months all cases in which it was possible have been treated by this method, but during one period of pressure it was impossible.

Patients have been kept on an average for ten days and then evacuated by barge to one general hospital, where they have been seen by Colonel Cuthbert Wallace, and reports on progress have been given to me by him and sent by the medical officers of that hospital.

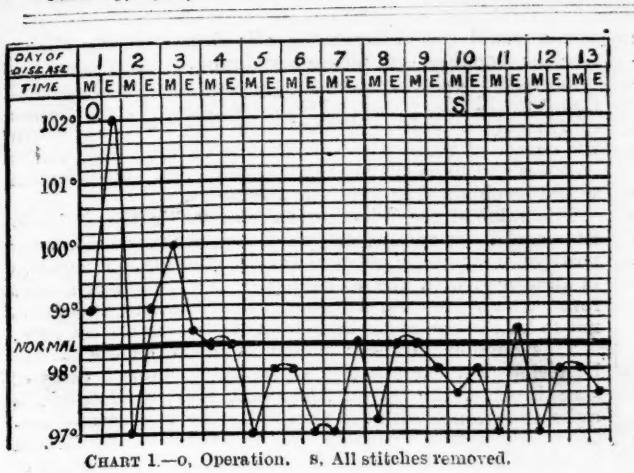

CHART 1.—O, Operation. S, All stitches removed.

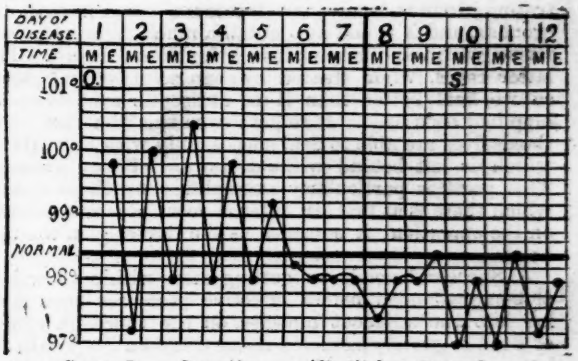

CHART 3.—O, Operation. S, All stitches removed.

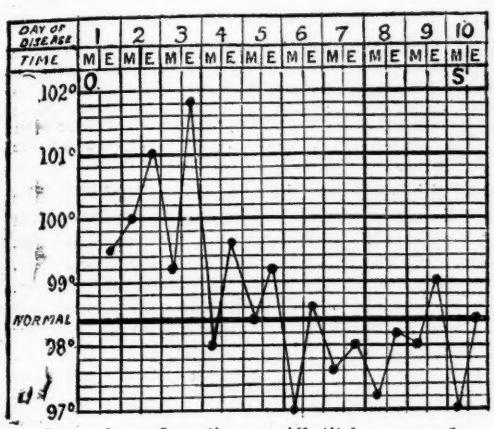

CHART 2.—O, Operation. S, All stitches removed.

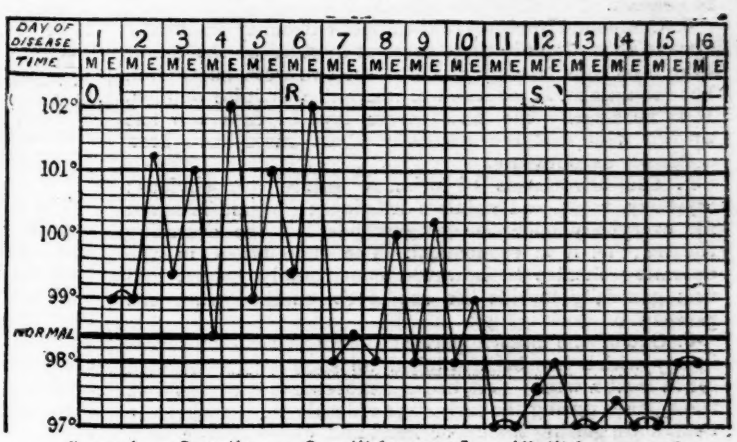

CHART 4.—O, Operation. R, One stitch removed. S, All stitches removed.

In this way it has been possible to follow the early history of all patients except a few who were unavoidably lost sight of during the period of pressure. The total number of cases was 116.

	No. of Cases.	Healed.	Healed after Superficial Suppuration.	Failed.	Result Unknown.
Wounds superficial to muscle	5	3	0	0	2
Deep flesh wounds ...	59	37	11	3	8
Compound fractures	38	28	5	2	3
Amputations	6	4	0	0	2
Knee-joints	8	3	0	2	3
Total	116	75	16	7	18

The compound fractures consisted of the following cases:

	No. of Cases.	Healed.	Healed after Superficial Suppuration.	Failed.	Result Unknown.
Femur	4*	2*	1	1	0
Tibia and fibula ...	1	1	0	0	0
Tibia	3	2	0	0	1
Fibula	1	1	0	0	0
Humerus	17	13	2	0	2
Radius and ulna ...	1	1	0	0	0
Radius	5	4	1	0	0
Ulna	6	4	1	1	0
Total	38	28	5	2	3

* One case was a partial fracture in which a piece of shell had passed through the shaft of the femur about the middle without producing complete fracture.

Out of a total of 98 cases in which the result was observed 91 eventually healed and 7 failed altogether.

Out of 38 cases of compound fracture, 33 eventually healed and 2 failed.

A considerable proportion of cases healed dry without any discharge. In some there was a little oozing or slight superficial suppuration, necessitating removal of one or two stitches before they healed.

A few cases became very swollen, red and shiny, about the second day, simulating acute cellulitis. The temperature rose to 102.3°, but the pulse as a rule remained below 100. After a day or two the swelling began to subside, redness disappeared, and the skin became crinkled, due to diminution of subcutaneous oedema. These cases may cause alarm at first, but it is rarely necessary to remove any stitches. The pulse-rate appears to be the best guide.

In some cases in which the wound was gangrenous before operation a brownish discoloration appeared around the wound, and the part might even become tympanitic. On removal of one or two stitches gas and offensive discharge escaped, and the infection as a rule subsided.

Four temperature charts are appended. Chart 1, a case of excision of elbow-joint, and Chart 2, an amputation of leg, followed a perfectly normal course and healed by first intention.

Chart 3 was a case of compound fracture of humerus with an opening into the elbow-joint. On the second day the whole elbow was very red, swollen, and shiny in appearance. It all subsided, and the wound healed by first intention.

Chart 4 shows a case of compound fracture of the femur. It was a severe fracture, with a large exit wound, in order to close which tension incisions had to be made. For the first six days his temperature rose at night and the pulse-rate caused apprehension, but on removal of one stitch on the sixth day, evacuating a small collection of turbid fluid under the skin, it gradually subsided and the wound healed.

CONCLUSIONS.

1. Soap solution easily permeates and comes into contact with the whole surface of the wound. It acts as a mechanical cleansing agent, washing away all débris.

2. Complete excision of a wound leaving an aseptic surface is possible only in superficial wounds and in superficial muscular wounds. It is impracticable in deep penetrating wounds, compound fractures, etc., on anatomical grounds, and it would also entail a much freer removal of tissue, which may impair future functional result. These latter cases, when treated by soap solution and primary suture, heal better than if an antiseptic such as eusol or bipp had been used. It follows from this that the tissues themselves are able to deal successfully with any infection which is left behind without the aid of any antiseptic. This point is particularly exemplified by those cases in which there is at first an intense local reaction following on the operation; it subsides as the tissues gain the upper hand.

3. Success depends on getting cases within a few hours of being wounded, before infective processes have spread far into the adjacent muscles, on the thorough removal of dead or grossly damaged tissues, and on the localization by *x* rays and removal of any foreign body that may be present.

4. Compound fractures of the upper extremity practically always do well; only three cases of fracture of the femur have been thus treated, and of these two were successful, but the number is too small to warrant a definite opinion. It is necessarily the most severe type of case one has to deal with, but the results of those cases have been distinctly encouraging.

5. The advantages of primary suture are obvious: (*a*) Easy, rapid, and painless dressings; (*b*) time is saved for everybody once the patient has left the operating theatre; (*c*) it is economical. The time taken in the operating theatre is, however, considerably longer, and this generally forbids the use of the method when the pressure of work is high.

6. One of the most important points is that no severe injury which has been stitched up should be evacuated for at least a week—first, because movement may just turn the balance during the early days of local reaction when the tissues are getting the upper hand and cause failure, and, secondly, because when it is very difficult to decide whether the case should be opened up or not the operator himself is in a much better position to judge what is likely to be taking place inside the wound he has sewn up than some one else who gets the case later; consequently stitches remain in which may otherwise be taken out perhaps through no fault of any one.

7. No opinion can be given as to the ultimate functional result as to bony union and action of muscles.

In those cases in which primary suture has been out of the question owing to gross loss of tissue, after the usual operative procedure I have used a soap pack after the manner of the salt pack. It has been left in as a rule for five to seven days, and when taken out left a beautifully healthy wound.

Acknowledgements.—I wish to express my indebtedness to Colonel Cuthbert Wallace, C.M.G., for much help and encouragement, and to Lieut.-Colonel D. O. Hyde, D.S.O., R.A.M.C., for kindly allowing me to keep these cases and to publish notes on them.

A SEROLOGICAL INVESTIGATION OF VINCENT'S ANGINA.

BY

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INFECTIVE disorders of the pharynx include a great variety of different conditions—ulcerative, membranous, ulcero-membranous, and septic—due to different micro-organisms, so that for their accurate differential diagnosis careful bacteriological investigations are necessary.

The nature of these investigations will depend on the clinical appearance which the lesions present. Thus, in membranous inflammations cultures on Loeffler's blood serum would reveal the presence or absence of the Klebs-Loeffler bacillus; in ulcero-membranous conditions the microscopic examination of properly prepared stained films would show the spirochaete and *B. fusiformis* of Vincent; a positive Wassermann reaction would prove the nature of ulcerative conditions to be syphilitic, whilst cultures and films showing streptococci and staphylococci would be obtained in pyogenic infections.

The value of the Wassermann reaction in the differentiation of these various conditions cannot be denied, being positive in syphilitic affections of the pharynx and negative in all others, with the exception of the angina of scarlet fever, which presents sufficiently characteristic symptoms not to lead to confusion, and is not further considered here.

This opinion, however, which is based on the careful bacteriological examination of several hundred cases of sore throat at the Queen Alexandra Military Hospital, is quite at variance with the views expressed in several contributions scattered through the literature of the subject, in which it is maintained that in uncomplicated cases of Vincent's angina the Wassermann reaction is often found to be positive. Thus, StClair Thomson[1] states that—

> From syphilis the differentiation—(of Vincent's angina)—is . . . difficult, as both fusiform bacilli and spirilla may be found in a cover-glass preparation from a tertiary ulcer, and also because, apart from concomitant syphilis, the Wassermann reaction may be positive. In more than one case I have seen a suspected Vincent's angina reveal its true nature by the evolution of a coppery rash or other specific stigmata.

The value of this statement is largely invalidated by the vagueness of the diagnosis of the Vincent's angina which was merely suspected. The diagnosis should, of course, have been definitely made by bacteriological examination. Still, allowing that the cases were really Vincent's angina, they would merely confirm Sobernheim's and Weinstein's findings that syphilitic and fuso-spirillary pharyngitis may coexist, and support our own conclusions that Vincent's angina may occur in subjects with latent syphilis. Bowman,[2] again, considers "that the disease may be confused with syphilis, and Vincent's angina may be superimposed upon a syphilitic or diphtheritic infection of the mouth and throat." Nevertheless, he found that the Wassermann reaction had always been negative in the uncomplicated cases of Vincent's angina seen by him.

Bouty[3] also, describing his experiences of Vincent's angina among the troops in France during the last two years, states that "the Wassermann reaction in Vincent's angina is negative," but the evidence upon which this statement is made is not given. This agrees with the findings of Campbell and Dyas,[4] who state that "a positive Wassermann reaction does not exclude Vincent's angina, nor does the fact that a mouth lesion clears up quickly under arsenic exclude syphilis." In cases of Vincent's angina with no syphilitic history, however, the Wassermann reaction is always negative.

Ehrlich[5] in 1910 called attention to the value of intravenous injections of salvarsan in Vincent's angina, and recorded the rapid healing within a few days of the lesions of this disease. Gerber[6] in the same year described a case successfully treated in this way, stating that the Wassermann reaction was weakly positive, and that he had also found it so in a previous case; he considered, therefore, that he could not definitely exclude syphilitic infection. Gerber[7] also quotes Much as having obtained positive Wassermann reactions in this condition. Much's[8] own statement made in 1908 is that in one other case of Plaut-Vincent's angina multitudes of non-specific spirochaetes were found in the tonsil. Lues was excluded, but on what grounds is not stated. The examination of the blood by the complement fixation method, which was undertaken during the febrile stage of the disease, gave a strongly positive reaction. Fourteen days afterwards, when the patient had recovered from the angina, the reaction was found to be negative.

Sobernheim's[9] name is constantly encountered in the literature of the subject as supplying the most definite evidence of the finding of a positive Wassermann reaction in Vincent's angina. His evidence rests solely on three cases, and a critical examination of these shows the flimsy basis on which his statement rests.

In the first case the patient presented the symptoms of secondary syphilis—typical exanthem, anal condylomata, and mucous plaques on the tonsil. While antisyphilitic treatment was being carried out a deep greyish-yellow coated ulcer, with

all the characteristics of Vincent's angina, developed. *B. fusiformis*, *Spirochaeta vincenti*, and *Spirochaeta pallida* were observed by dark-ground illumination. Antisyphilitic treatment was suspended, serological examination of the blood gave a positive result, and after some days the ulcer healed spontaneously.

The second case was a youth of 17, who complained of pain in the neck and difficulty in swallowing. The left tonsil was red and swollen, its upper pole being covered with a smeary exudation. The cervical glands were enlarged, but not tender. In stained film preparations *B. fusiformis* and spirochaetes were present in enormous numbers, and the diagnosis of Vincent's angina was made. The Wassermann reaction was completely positive. Potassium chlorate lotions were ordered, and healing was complete in eight days.

The third case was a young woman of 18, in whom the diagnosis of Vincent's angina was made from the condition of the tonsil and the whole course of the illness. The Wassermann reaction was negative. A few days later an ulcer of the tonsil appeared, which rapidly cleared up without specific treatment. Mucous plaques developed later on both tonsils, and the patient was then placed on antisyphilitic treatment.

Sobernheim concludes that great caution must be exercised in applying the Wassermann reaction to the differential diagnosis of lues and Vincent's angina.

In the first and third of these cases it is obvious that the syphilis and the Vincent's angina were merely concurrent infections, and that in the second case latent syphilis, either congenital or acquired, could not be excluded with certainty.

Weinstein,[10] in discussing the value of the Wassermann reaction in rhino-laryngological practice, stated that in cases of Vincent's angina the ulceration of the tonsil may sometimes appear to be syphilitic, and that neither the clinical appearances nor the microscopic findings are sufficient to establish a definite diagnosis with certainty. In such cases he states that he employed the Wassermann reaction with good results, and gives his experience of four cases:

A woman of 24, suspected to being syphilitic, presented the typical appearances of Vincent's angina, with an immense number of fusiform bacilli and *Spirochaeta buccalis*. The Wassermann sero-diagnostic test was completely negative. In two other persons suffering from Vincent's angina, with the characteristic micro-organisms present, a history suggestive of syphilis was obtained, and was confirmed in both cases by the Wassermann reaction. In the fourth case of angina with a doubtful syphilitic history, in which *B. fusiformis*, *Spirochaeta buccalis*, and *Spirochaeta dentium* were present in large numbers, the sero-diagnostic test was negative.

Saverio,[11] discussing Vincent's angina and syphilis, considers from the cases cited above that the presence of numerous Vincent organisms in the exudation of cases of angina does not as a necessary consequence produce any deviation of complement, and that until such important problems have received sufficient light new parallel studies must be made—on the one hand to establish the pathogenic value of the spirochaetes commonly found in Vincent's angina, and, on the other hand, to accumulate sufficiently numerous cases of similar forms of angina in which the sero-diagnosis has been made. If a certain diagnosis cannot be made, he holds that the hypothesis of Vincent's angina in syphilitic subjects is the most probable.

It is to the latter suggestion of Saverio's that we have directed our attention. At the Queen Alexandra Military Hospital we have recently had occasion to examine bacteriologically more than 300 cases of fuso-spirillary infection, and about half this number were typical cases of Vincent's angina verified by bacteriological findings.[12 13] From this number we have taken at random, and with no more selection than mere convenience demanded, 55 cases, and had the blood tested by the Wassermann reaction, performed either by one of us (F. E. T.) by the method recently described,[14] or at the laboratories of the Rochester Row Military Hospital.

In all of these cases, with but two exceptions, no fixation of complement could be observed. The histories of these two cases, in which a positive Wassermann reaction was obtained, are as follows:

CASE I.

Pte. G., Australian Imperial Force, attended the laboratory on December 14th, 1916, for a sore throat which had troubled him for a week. A superficial ulcer was seen on the right tonsil, and the margins of both upper and lower gums were ulcerated and covered with a soft, creamy exudate. The lymphatic glands at the right angle of the jaw were swollen and tender. The ulcers on the tonsil and gums bled when touched lightly, and smears from these parts showed numerous fusiform bacilli and spirochaetes. The gums and tonsil were treated daily and by December 20th the latter was quite healed. The patient continued to attend for treatment of his gums, and on December 24th a sluggish-looking ulcer was noticed on his left tonsil. Smears from this ulcer presented microscopically a typical picture of the organisms of Vincent's angina, but it was noticed that the glands at the angle of the jaw were not enlarged and the ulcer did not bleed when touched. The Wassermann reaction was positive. On cross-examination the patient admitted that he had contracted syphilis in Australia, having had a primary chancre ten years previously for which he was treated successfully; he remained free from secondary symptoms and had had no further syphilitic manifestations up to date.

CASE II.

Pte. J., Australian Imperial Force, attended for a sore throat which had troubled him for a month. There was a deep ulcer filled with a yellowish-white exudate on the left tonsil, and the upper and lower gums were ulcerated. The ulcers on the tonsil and gums bled when lightly touched, and smears when examined microscopically showed the usual picture of the organisms of Vincent's angina. The lymphatic glands at the left angle of the jaw were enlarged and tender. As we were making a serological investigation of Vincent's angina at this time a sample of the patient's blood was taken for examination and gave a positive Wassermann reaction. The result was communicated and explained to the patient, who then admitted having had a chancre ten years ago, when he was treated by a herbalist for three months with medicine and ointment for the sore. No secondary or further symptoms of the disease had been noticed. He was married, but had had no children. The throat and gums were treated on the lines we had adopted for fuso-spirillary ulcerations. The throat had healed in a week, and the gums about three weeks later. This case, from its clinical characteristics and microscopical findings, was obviously one of fuso-spirillary ulceration in a subject with latent syphilis.

These two cases, then, were the only ones out of a total of 55 cases of Vincent's angina examined by the Wassermann test in which the reaction was positive; the remaining 53 cases were quite negative. The positive character of the reaction in the two cases admits of a ready explanation, and was not due to the fuso spirillary infection of Vincent. In both cases the condition was one of Vincent's angina in a subject of latent syphilis.

As a result of this investigation and of a careful and critical consideration of cases recorded in the literature we have come to the conclusion that the prevailing belief in the occurrence of a positive Wassermann reaction in Vincent's angina has no foundation in fact, and that the two conditions can be differentiated with absolute certainty by the application of bacteriological and serological methods; and that when the complement-fixation test of Wassermann is positive in cases of Vincent's angina, then a double infection exists, either as a coincident syphilitic and Vincent's infection or as the occurrence of Vincent's angina in the subject of latent syphilis.

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A PREPARATORY institution for the school of naval medicine has been established temporarily in connexion with the University of Bordeaux. Its object is to give the first year of medical training to young men intending to adopt the career of naval or colonial surgeon.

THE French Food Minister, M. Victor Boret, who worked in maltings and in a shipbroker's office in this country before joining his father as a corn merchant in France, takes a sanguine view of the food position of that country. There is, he says, enough meat, potatoes, and corn, except oats, if there is no waste. In Germany there is, he believes, a total want of fats, oil, tea and coffee, and so great a shortage of foods that the people are underfed. There has recently been some difficulty about bread in Paris, owing to transport delays due to the bad weather and severe snowstorms, but arrangements have been made which it is believed will ensure an even distribution of flour among the bakers.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A NOTE ON SKIN GRAFTING.

Two instances of skin grafting in my practice are worthy of notice, especially by the general practitioner.

In both cases there was an extensive raw surface, one over the whole front of the lower leg in a man of 65, the other in a virile old man of 82 over the whole area of the scapula.

I have nothing to suggest as to method, but, as far as I know, the source of the grafts is novel. The foreskin of a circumcised infant was utilized in each case. At least two hours elapsed after the circumcision before the grafts were placed *in situ;* they were kept in the meantime in a bottle of normal saline. The wounds were both clean and fairly free from discharge. The grafting skin was scraped and cut into small pieces about one-eighth of an inch square, applied to the wound, covered with oilskin, and bandaged lightly. Two days were allowed to elapse, and it was then found that six out of seven grafts had taken in each case.

The points of interest are (1) the source of the grafts, (2) the utilizing of a waste product, and (3) the length of time between the taking and planting of the grafts.

Wednesbury. H. C. CREW, L.S.A.Lond.

BILATERAL TWISTED OVARIAN TUMOURS.

ON opening the abdomen of a patient to deal with, as I thought, a twisted ovarian tumour, I was surprised to find that the condition was bilateral there being an ovarian tumour the size of a fetal head on the left side, and one somewhat larger on the right. As the patient had been ill about a fortnight before I saw her, both were almost gangrenous and adherent to everything round about. With patience both were isolated and removed, and as the vermiform appendix was closely involved in adhesions to the tumour of the right side, it also was removed. Owing to the condition of the tumours drainage was necessary for some days, but the recovery of the patient was uneventful.

JOHN ARMSTRONG, M.D., R.U.I., F.R.C.S.I.

Ballymena Cottage Hospital.

A CASE OF SEPTICAEMIA DUE TO INFECTION BY *BACILLUS DYSENTERIAE* SHIGA.

THE following case is of special interest in presenting several abnormal clinical and pathological features:

Driver A. B., aged 21, after two years' home service went to the East. On July 22nd diarrhoea is said to have commenced—twelve to fourteen stools daily. The patient stated that he had headache from onset, but no mention was made of abdominal pain or tenderness. On July 27th he was admitted into a dysentery ward of the military hospital at Malta, under my care. He was then exhausted and collapsed, with sordes on teeth and lips, furred tongue, extreme thirst, constant headache, marked restlessness, and incontinence of urine and faeces. The temperature was 99°, and the pulse 84. His appearance suggested a severe typhoid condition, so much so that, although admitted as a suspected dysentery, antidysenteric serum was withheld pending the pathological examination of the stools. He could answer questions and remained quite rational for the first twenty-four hours. No enlargement of liver or spleen was detected, and no abdominal pain or tenderness elicited; there was no exanthem and nothing abnormal in heart or lungs.

The stools, which were very frequent, consisted of fluid faecal matter mingled with blood in considerable quantity. Their glairy appearance suggested amoebic dysentery, but no animal parasites were found by the protozoologist. Tenesmus and straining were absent, and the patient never complained of any abdominal discomfort.

On July 28th he was more drowsy, becoming semi-conscious and incoherent at times. The restlessness had increased—frequently tried to get out of bed—but he took fluids well, and the pulse had improved. The temperature once reached 100.2° (its maximum), otherwise it remained about 99° till the day of death, when it fell to 97.4°. The stools now consisted almost entirely of pure, bright blood. His condition steadily became worse, and on July 29th, as he was presenting a picture of increasing septicaemia resembling the typhoid state, blood was taken from the median basilic vein for pathological examination. By this time the pathologists had reported the stool culture to be negative to *Bacillus dysenteriae* Shiga.

On consultation, the view was expressed that the case was probably a fulminating Shiga dysentery, stress being laid on the carinated abdomen associated with the marked toxaemia. The administration of antidysenteric serum was advised, and 60 c.cm immediately injected subcutaneously; it was rapidly absorbed. This dose was repeated next day, when it was found that the patient's blood—which had been sown in bile and incubated for twenty-four hours—gave a profuse, pure growth of the Shiga bacillus, and also an agglutination which pointed strongly to Shiga infection. Still no *Bacillus dysenteriae* Shiga had been found in the stools.

The patient's condition steadily became worse, and, in spite of frequent saline infusions and other stimulative treatment, he died at 8 p.m. on July 30th, within three days of admission.

The *post-mortem* examination showed extensive disease of the large intestine. The whole of the mucous membrane from the ileo-caecal valve down to the anus was intensely congested, being studded throughout with minute superficial ulcers. The whole appearance showed an exceedingly rapid and fatal infection with *Bacillus dysenteriae* Shiga, which was isolated from scrapings taken from the mucous membrane of the lower bowel. Nothing abnormal was found in the small intestine.

The points of special interest in the case are:

1. The rapid progress of the disease, producing a profound toxaemia caused by the septicaemia.
2. The atypical temperature chart.
3. The marked cerebral symptoms as compared with the clear mental condition exhibited in ordinary acute dysentery cases.
4. The absence of any abdominal pain, tenderness, straining, or tenesmus.
5. The fact that the Shiga bacillus was not isolated from the stools during life, whereas, in the great majority of acute bacillary stools examined during the last two and a half years at this military hospital, positive results have been obtained.
6. Lastly, and perhaps most interesting, the fact that a pure culture of the Shiga bacillus was grown from the patient's venous blood. Only rarely has it been found possible to isolate the *Bacillus dysenteriae* Shiga from the blood, this being the first occasion at the hospital, and, so far, only a few cases have been reported by workers in other laboratories.

I wish to tender my grateful thanks to Captain Shields, R.A.M.C., O.i/c Laboratory, and to Dr. Ada McLaren, for their kind collaboration, and also to the O.C., Lieut.-Colonel G. B. Price, R.A.M.C., for permission to publish the case.

C. MURIEL ASTLEY MAER, att. R.A.M.C.

Reviews.

CONDUCTION OF THE NERVE IMPULSE.

IN 1914 Dr. KEITH LUCAS of Cambridge delivered seven Page May Memorial lectures at University College, London, but they had not been completely written out at the time of his untimely death in an aeroplane accident. His co-worker, Dr. ADRIAN, has therefore, with the modest devotion of a pupil, finished the last labours of a great physiologist, who since the beginning of the war had applied all his inventive genius to solving the practical problems of aviation, and whose death, as will be disclosed later, is as great a loss to flying as to physiology. The result is a volume with the title *The Conduction of the Nervous Impulse.*[1]

The object of the lectures was to discuss how a nerve conducts the nervous impulse and how far the phenomena of conduction in a peripheral nerve can be made the basis of the understanding of conduction in the central nervous system. The impulse in a nerve of a nerve-muscle preparation is followed by a refractory period, during which the nerve is unable to respond to a second stimulus; this is due to a defect both of excitability and of conductibility. With the return of excitability the nerve becomes more excitable than when at rest, and the supernormal phase explains the phenomenon of summation—namely, that when a single impulse fails a repetition succeeds, provided that it is so timed as to fall within the supernormal phase left by its predecessor. After the demonstration that summation and apparent inhibition—the two most important phenomena of reflex conduction—can be reproduced in the isolated nerve-muscle preparation, the phenomena of these processes are applied to the central nervous system in the chapter on central inhibition, which Dr.

[1] *The Conduction of the Nervous Impulse.* By the late Keith Lucas, Sc.D., F.R.S., Fellow and Lecturer of Trinity College, Cambridge. Revised by E. D. Adrian, M.B., M.R.C.P., Fellow of Trinity College, Cambridge. Monographs on Physiology. Edited by E. H. Starling, M.D., F.R.S. London: Longmans, Green and Co. 1917. (Med. 8vo, pp. 102; 22 figures. 5s. net.)

Adrian has supplied with some hesitation owing to uncertainty as to how far the late Dr. Keith Lucas would have wished to enter into the speculation necessarily involved in the discussion of this subject. As Professor Starling says in his sympathetic preface, Keith Lucas's work is for all time, and will serve as a sure vantage ground for future investigators.

MEDICINE IN THE DARK AGES.

DR. CHARLES SINGER'S *Review of the Medical Literature of the Dark Ages*[2] is a scholarly piece of work for which all students of the history of medicine should be grateful. He dates the new birth of medicine in Western Europe from the translations of the so-called Arabian writers, which began to be well known in the second half of the twelfth century. For at least three hundred years Latin translations from Arabic versions and commentaries on Aristotle, Galen, and other Greek writers were the basis of such scientific knowledge as there was.

The true mediaeval period of medicine began somewhere about 1150, while the dark age began at the death of Bede (673–735). The medical writings produced in Western Europe during the four centuries following that event fall under one of three heads—vernacular, Latin extra-Salernitan, and Salernitan. A brief account of each of these groups is given. Vernacular medicine in Europe before the twelfth century is confined to Anglo-Saxon texts. The characteristic features of our native medical literature are wide knowledge of herbs and simplicity of pharmaceutical processes. There are no anatomical descriptions, and no attempt is made to separate diseases from symptoms. Salernitan medicine deeply influenced some of the Anglo-Saxon literature, but the two have a common ancestor in Greek and Roman medicine.

Dr. Singer's search in the dust of forgotten lore has brought to light a new text of about 1110 which is an encyclopaedia of scientific knowledge of the twelfth century. The MS., which was found in St. John's College, Oxford, is of folio size, and consists of 177 parchment leaves, the text being illustrated by a large number of coloured diagrams and a few pen and ink drawings. Among the contents are sections on lucky and unlucky days, a table of consanguinity, astronomical tables and calculations, etymologies, rules of grammar and prosody, with other miscellaneous matter. To the medical historian the most interesting part is a compendium of medicine consisting of chapters on the constitution of the body from the four humours, the regimen of the four temperaments, blood letting, the prognostication of life and death, a glossary of herbs, a table of weights and measures, recipes for electuaries and for plasters, an Anglo-Saxon charm to stop nose-bleeding, the relation of fevers to the humours, the principles of pathology, panaceas, an alphabetical list of remedies with the diseases for which they are suitable, and a list of diseases with the appropriate remedies. Dr. Singer publishes the Latin text, and very "doggy and mediaeval" (to use a phrase of Sir Clifford Allbutt's) it is; for the convenience of the reader he has broken up the sections into paragraphs and has supplied headings. As the text is in many places defective he has filled in gaps and furnished necessary elucidations. He also gives partial translations of some of the more important passages. Dr. Singer has no doubt that the writer of the MS. was a Saxon, not a Norman. He says that the treatment of the theoretical aspect of medicine in the work, absurd as it is, marks a real advance on what had gone before. It shows signs that the human intellect, which had reached its nadir in or about the tenth century, was already in the ascendant, and preparing for a brighter future.

The same volume of *Proceedings* of the Royal Society of Medicine contains a note by Dr. Singer on the figures of the MS. of the *Inventorium seu collectorium in parte Cyrurgicali Medicine* or *Grande Chirurgie* of Guy de Chauliac. It was written by Jean Tourtier, master in surgery, for presentation to the Duke of Bedford, and can therefore be dated between 1420, when the Duke became Regent of France, and 1435, when he died. Scattered through the volume are eight miniatures showing an anatomical demonstration, and surgical scenes such as opening of abscesses, stitching and dressing of wounds, blood-letting, and so forth. All these are reproduced. There are also some rough drawings of surgical instruments.

[2] Reprinted from the *Proceedings of the Royal Society of Medicine*, 1917, vol. x (Section of the History of Medicine). London: John Bale, Sons, and Danielsson. 1917.

NOTES ON BOOKS.

THE publication of the twenty-eighth issue of *Burdett's Hospitals and Charities*[3] has been unavoidably delayed owing to difficulties due to the war, which are particularly heavy in the case of an elaborate and exhaustive reference book of this kind. Despite the war, every effort has been made to keep the work accurate and up to date. So far as possible, those institutions are indicated which have supplied accommodation for the reception of the sick and wounded from the war. It has, however, been found impracticable to separate the financial results of the normal from the abnormal activities of permanent charities under war conditions, and the total income and expenditure only have been indicated in the accounts. This year's issue includes for the first time the names of military convalescent camp hospitals, and the tables relating to the hospitals of the United States, Canada, Australasia, and India have been remodelled. The opening chapters give the usual comprehensive survey of the volume of charity, of hospital finances and new construction, and of many other matters of particular interest to the world of charity. As in the previous volume, the index is placed at the end of the first 156 pages of literary matter, thus bringing it into direct contact with the classified directory of institutions which occupies the greater part of the volume. Sir HENRY BURDETT is to be congratulated on the continued excellence of this indispensable year-book of philanthropy and hospitals, and we hope that he may be successful in his quest for a competent successor in the editorship, to which he once more makes allusion in the preface. It would be a misfortune if no one were found able and willing to carry on a work of such value and importance both to the hospital system and to the public at large.

Whitaker's Almanack[4] this year completes its first half-century. It has become so familiar a part of the furniture of the worker's desk that it is hardly necessary to praise it. It is the most remarkable annual cyclopaedia anywhere published. This edition appears to be made up to the end of October, 1917, and the diary of the war is continued to that date. There is a special section on the new Empire honours, but the lists have, of course, been rendered incomplete by the recent New Year's awards. Attention is called in the preface to the steady growth of Government departments, and their constitution and principal officers are, as a rule, duly noted; but here again, in many instances, changes have been made very recently. The navy and army lists have been omitted entirely, as nothing adequate relating to either service could be presented, and we agree that the excision was inevitable. The book remains the most convenient current work of reference.

On November 3rd, 1917, we published (p. 594) a note of the story Dr. W. W. KEEN had then recently published of the case of the late President Cleveland. The matter has now been issued in a small volume entitled, *The Surgical Operations on President Cleveland in 1893*.[5] Dr. Keen has written a foreword which makes one or two points plain.

[3] *Burdett's Hospitals and Charities, 1917.* Edited by Sir Henry Burdett, K.C.B., K.C.V.O. Twenty-eighth year. London: The Scientific Press, Ltd. 1917. (Cr. 8vo, pp. 1033. 12s. 6d. net.)

[4] *Whitaker's Almanack for 1918.* By J. Whitaker, F.S.A. London. 1918. (3s. 6d. net.)

[5] Philadelphia: George W. Jacobs and Co.; London: F. Bird, 22, Bedford Street. (Pp. 55. 3s.)

MEDICAL AND SURGICAL APPLIANCES.

Photographic Papers for X-Ray Work.

MESSRS. ILLINGWORTH AND CO., Park Royal, Willesden Junction, London, N.W.10, have sent us samples of special papers they have placed on the market for printing from *x*-ray negatives. They are made in both bromide and gaslight varieties, and, in addition to the standard grade for average negatives, there is a special grade for weak and thin negatives. They can be used with the W. O. *x*-ray plate developer in use in military hospitals, and the makers supply full information as to the best method of development. The papers have been tested for us, and have been found excellent in every way. The quality of the paper base is good, and the emulsion gives good detail and vigorous prints with good contrasts; the papers are therefore very suitable for *x*-ray pictures.

British Medical Journal.

SATURDAY, JANUARY 19TH, 1918.

THE WISE USE OF MEDICAL MAN POWER.

THE speech of the Minister for National Service in the House of Commons on Monday brought before the country the position as to man power with a frankness which was the truest wisdom. He insisted on the paramount importance of the navy, and mentioned that the personnel of the navy, which stood at 150,000 in August, 1914, had risen in October, 1917, to 400,000. He called on us to return to the faith of our forefathers and to recognize that on the sea and by the sea we lived. Though we are called upon to play a larger part in the field of battle until America comes in, and that means more men for the army, it does not mean men regardless of the vital industries which support the armies, and not men nor munitions of war regardless of the navy on which all else depends, nor men regardless of food on which the health and endurance of the people depends. The British army to-day has, he said, on its rolls over four million men, and altogether the British nations have provided for the armed forces of the Crown not less than 7,500,000. Of these, 4,530,000, or 60.4 per cent., have been contributed by England; 620,000, or 8.3 per cent., by Scotland; 280,000, or 3.7 per cent., by Wales; 170,000, or 2.3 per cent., by Ireland; and 900,000, or 12 per cent., by the Dominions and the Colonies. The remaining million men, composed of native fighting troops, labour corps, carriers, and so on, represent the splendid contribution made by India, Africa, and other parts of the empire.

He went on to show that the demand now existing for more men for the army could be met from two sources—the reserve now in the armies at home and abroad and the men still in civil life. The composition of the armies at home is being readjusted so as to enable the greatest possible proportion of the demands of the armies overseas to be met within the army itself, but, when all was done, it was necessary to proceed immediately to raise in this country 420,000 to 450,000 men from among those now in civil life. On the other hand, measures were to be taken to return simultaneously a large number of men from the forces to civil life, and in particular to avoid calling upon men who have been seriously wounded to fight again. The ideal of the Ministry was a system of recruitment based on occupation, conditioned by age, and it might be by marital state. The intention was to reinforce the army with the youngest men that could be got, but not to lower the age (18). Young men would be taken out of essential industries and their places supplied by men of those trades who had fought and had been wounded, if male substitutes were necessary at all.

The Military Service (Review of Exceptions) Act, 1917, would be administered with great care and consideration. Until recently, he pointed out, recruiting had been regarded as purely the duty of the military authorities; it was now a civilian duty, and Great Britain was for the purpose of recruiting divided into ten regions, each under an officer responsible for the due administration of recruiting within his region. Sir Auckland Geddes was able to assert that the machine was running smoothly and well, and though he did not say so, we believe that this is largely due to the successful working of the Medical Department of the Ministry. The first duty of that department was to take over the arrangements for the medical examination of recruits and to establish recruiting boards on a civilian basis. In planning out this work the policy of the Medical Department of the Ministry has been to make use of the central and peripheral machinery already existing in the central Professional Committees and the Local Medical War Committees throughout the country. The loyal co-operation of these bodies with the Ministry is fully recognized. The Local Medical War Committees were asked to suggest the names of practitioners in each area who would be able to give part-time services upon the National Service Medical Boards, the idea being to spread the work as far as possible over a number of practitioners, each giving part-time services, rather than to employ whole-time medical officers. It was recognized that this would lead to greater economy in the use of medical man power. The actual appointments to the panels, out of which, from day to day, the boards are constituted, remain in the hands of the Ministry, along with discretionary powers as to altering or adding to the lists of names suggested by local committees; in one or two instances the boards are still conducted under the old whole-time system, but this is merely a matter of temporary convenience, and in nearly every area they are now working on the new basis and working satisfactorily. Each board is under the chairmanship of a Deputy Commissioner of Medical Services, who is a whole-time officer appointed directly by the Ministry. The new system of gradings provides standards of comparison of physical fitness for which a good claim to scientific accuracy can be established.

As a part of its general duty to estimate and organize the man power of the country the Ministry has become responsible for the supply of medical men to the military services and for their selection, with due regard to the needs of the civil population, among whom, it must never be forgotten, workers in munition and other essential trades are included. It is hoped that with the improvements in the distribution of medical officers in the army, both abroad and at home, with the practice of strict economy of medical men at all fronts, and with a continuation of the generous assistance given by America, it may prove possible to avoid further calls upon the civil profession to supply more medical officers for the army; but we believe that with the great increase in the personnel of the navy mentioned by Sir Auckland Geddes the demands of the medical service of that arm are becoming more insistent.

The Ministry of National Service has recently been approached by the Ministry of Pensions with a view to providing the personnel and, in general, organizing the establishment of boards at discharge centres to examine the soldier upon discharge and estimate his pension, and of Pensions Boards for the periodical re-examination of pensioners. Arrangements are in course of being completed by which the Ministry will, in appointing these new boards, act upon the same lines as before—that is to say, it will obtain suggestions as to suitable practitioners from the Local Medical War Committees, though reserving to itself powers in regard to the actual appointment.

The establishment of numerous boards in this way has necessitated a wide survey of medical man power in the country, in order that the different forms of Government work may be so distributed as to secure, in the first place, the right man for each form of work,

and to ensure, in the second place, that each medical practitioner is as far as possible doing his proper share of it. It has thus become increasingly necessary for the Ministry to undertake the general survey of the medical man power of the country, and it is in this connexion that medical men of military age have recently been asked to submit themselves for physical examination. Very busy practitioners may not find it easy to give the time for this examination, but it is hoped that when they realize that the request is not an idle one they will cheerfully respond.

The Deputy Commissioners in the different areas will work in close co-operation with the Local Medical War Committees and with other medical organizations, and will act as the outposts of the Ministry in the country, being responsible for supplying to it all information as to the employment of medical men in their areas.

The Ministry of National Service has been called into existence to meet an emergency, but as is here indicated its scope is already wide, and its work will not come to an end with the war, however that ends. It may have, and we believe will have, a great influence on the future of the medical profession, and we rejoice to think that it has not at once set to work to create a large new corps of medical officials, but is seeking to enlist the help of doctors actively engaged in general practice.

THE USE OF POTATOES IN BREAD-MAKING.

AT recent meetings of the Académie de Médecine[1] MM. Maurel and Gautier have discussed a question of great practical importance—namely, the utilization of potatoes in bread-making. The discussion was initiated by M. Maurel, who communicated the results of his observations upon bread made from wheat flour (milled to 85 per cent.) and potato pulp, the percentage of the latter increasing from 20 to 50 per cent. The nutritive values of the mixtures were found to be as follows, per 100 grams: In 20 per cent. potato bread, calories 308; in 30 per cent., 283; in 40 per cent., 259; in 50 per cent., 234. Protein, in 20 per cent. potato bread, 8.51; in 30 per cent., 7.68; in 40 per cent., 6.84; in 50 per cent., 5.97. All these breads were found to be well risen and elastic on removal from the oven; they kept fresh a considerable time, only losing 2 per cent. of weight in forty-eight hours; and, even with 50 per cent. potato pulp, retained a satisfactory odour of wheaten bread. The bread absorbed liquids, and was consequently insalivated more easily than that prepared without admixture. Maurel suggested that the decreased nutritive value with increasing admixture of potatoes could be avoided by the introduction of bean flour, his suggestion being to use 60 per cent. wheat, 30 per cent. potato, and 10 per cent. bean flour. In his opinion the use of potatoes in baking was impracticable for small private bakers, but both possible and desirable in State, communal, and army bakeries, as well as in families that make their own bread; he gave statistics showing that in this way important economies in wheat consumption might be effected.

In his criticism of this communication M. Gautier referred to the potato bread prepared by the orders of the Minister of Revictualling and recommended in a circular to the prefects on August 7th, 1917. This bread contained 20 per cent. of potato flour and possessed an energy value of 253.6 calories per 100 grams (6.90 grams protein). Gautier did not deny that the ministerial bread possessed the merits claimed on its behalf, but he dissented from the view that such a bread could be prepared by private bakers, and emphasized the difficulties in this direction to which Maurel had alluded. Gautier believed that it would be better to reduce the bread ration rather than further to dilute the official loaf with substitutes for wheat, and to encourage the public to use potatoes and other vegetables cooked in the normal way. M. Gautier's criticism does not take account of an important advantage associated with the use of potatoes in bread rather than in their natural state. We have already directed attention to the difficult problem of internal transport, and it might be much easier to organize deliveries of supplies to large bakers, than to retail greengrocers when we are concerned with the very large quantities in question. There is also the difficulty of giving variety to the cooking of potatoes when fats are scarce.

The Ministry of Food has taken up the subject and we have received a sample loaf containing 10 per cent. of potato flour. Particulars have not been supplied of its analysis, but, so far as appearance and palatability are concerned, we can testify that M. Maurel's claims are just. The bread seemed to us of better flavour than that baked from ordinary G.R. flour, and a portion preserved for twenty-four hours (that is, eaten at least forty-eight hours after baking) seemed less stale than our customary war bread. If other bakers are able to reach the Ministry's standard, the potato bread should be in great demand, and, from the physiological point of view, as we have more than once remarked, its use is very desirable on account of the superior biological value of potato protein in comparison with that of wheat. The public should be urged to try the new bread at once, and we understand that the use of a certain percentage of potatoes in bread-making is about to be made compulsory.

[1] *Bulletins de l'Académie de Médecine*, Nos. 43 and 44, sittings of November 6th and 13th, 1917.

SIR ALFRED KEOGH.

SIR ALFRED KEOGH retires from the office of D.G., A.M.S., leaving behind him the reputation of one of the greatest organizers and administrators the army has produced. It was not an accidental coincidence that he and Sir William Robertson received the G.C.B. on the same day about a year ago. When he took up the office for the second time, in October, 1914, he knew that he had undertaken a task beset with difficulties. He succeeded in carrying day after day a burden of responsibility and labour which only a man of his energy, enthusiasm, and mental calibre could carry. He had to meet at once the medical needs—which then seemed immense—of the new armies of men who voluntarily responded to Kitchener's appeal. The response came in a manner redounding to the everlasting honour of the British medical profession. The response must have heartened Sir Alfred Keogh in those difficult early days after Antwerp and the first battle of Ypres. It would have been made whoever had been in his place, but it was made more readily and with more confidence because he was there. Men at such moments do not stop to analyse the springs of their conduct, but there can be little doubt that the spontaneity of the response was in part due to the feeling that Sir Alfred Keogh was one of us; that through his long years of military administration he had never forgotten that he was a doctor first and a soldier afterwards. He has said this or something like it very often, and his record in the service would stand as evidence had he never said it. The work of the enlarged Army Medical Service, of which he has had the central direction, has been greatly successful in the prevention of disease, in the treatment of the wounded and sick, and in their transport and hospitalization. The first urgent problem

of the war on the Western front was raised by the frequency of wound infections of extraordinary severity and of types which, if not new, were unknown except by name to modern surgeons. Then appeared at once the wisdom of the appointment of consulting surgeons, physicians, and pathologists, and the establishment of clinical and research laboratories under the direction of skilled men of the younger school. In all this Sir Alfred Keogh has shown a quality which distinguishes a great from a good administrator, a quality which he shares with his distinguished colleague in France, Sir Arthur Sloggett, of encouraging men of capacity, in the words of Harvey, "ever to search out and study the secrets of nature" at the bedside or in the laboratory. In the course of his multifarious work of the last three and a half years Sir Alfred Keogh has had to touch the fates of ten thousand medical men of all ages, dispositions, and clinical acquirements. That the Army Medical Service has during these times always succeeded in using its civilian recruits to the best purpose would be to claim too much. It is not in mortals to avoid mistakes, but we are quite sure that throughout it all the retiring Director-General has been inspired by a real appreciation of the importance of scientific methods, by a genuine love of his profession, and a whole-hearted desire to do the best possible for the armies and for the sick and wounded. In choosing Sir Alfred Keogh's successor, the precedent recently created in other branches of the army, of looking to the younger men, has been followed. Colonel Goodwin, who entered the R.A.M.C. in 1893, is not yet 47. He served with distinction in frontier expeditions in India and has won golden opinions in this war where he served in France from the earliest stage, as more recently in America, to which country he proceeded as a member of Mr. Balfour's mission last spring. He has a difficult succession; we wish him every success in the high office to which he is called.

THE STAFFS OF THE INSURANCE COMMISSIONS.

A REPORT on the administration of National Health Insurance during the years 1914–17 has been presented to Parliament and published.[1] The last report was that dated June, 1914, and dealt with the year then terminated. In 1915 it was resolved to suspend the publication of an annual report, owing to the conditions arising out of the war, and in particular to the serious depletion of the staffs of the Joint Commission and the several commissions. It has, however, now been considered advisable to publish a report covering the period from the outbreak of war to November, 1917, more especially as several matters of interest have to be recorded relating to the adaptation of the machinery of National Health Insurance to war conditions. Precedent is followed in the division of the report into parts describing the work of the Joint Committee and the several commissions; but, in view of the shortage of paper, and as many of the details of administration are the same in all the four countries, they are described fully in the part dealing with the English Commission, the reports of the work of the Scottish, Irish, and Welsh Commissions supplementing that description wherever the conditions in those countries depart from those prevailing in England. The male staff of the Joint Committee at the outbreak of the war was 39, including 11 men over military age; this has been greatly reduced, as 15 have been released for military service (of whom 3 have been killed) and 13 lent to other departments engaged on war work. The net result in the loss to staff has been 71.8 per cent. For similar reasons the male staff of the English Commission has lost 720 out of 1,106, or 65 per cent. This loss has been met mainly by the engagement of women, of whom there are now nearly 1,600 in the employment of the Commission. Of the members of the staff on active service 63 have lost their lives, and in addition 2 have been missing since May, 1917, 1 is interned in Holland, and 2 are prisoners of war in Germany. One member of the staff, Sub-Lieutenant A. W. St.C. Tisdall, R.N.V.R. (killed in action), received the Victoria Cross. Prior to the war the Scottish Commission had 261 men in its employment, of whom 213 were of military age; at the present time the corresponding figures are 72 and 44. Of the staff on active service 23 have died, 1 is reported missing, and 1 is a prisoner of war. The Welsh Commission has been able to release 117 out of the 167 male officers it had at the outbreak of war; 11 have been killed, and 1 is missing. The staff of the Irish Commission included 213 male officers at the outbreak of war, of whom 172 were of military age; 45 members, constituting 21 per cent. of the total male staff and over 26 per cent. of members of military age, have voluntarily joined the forces; 9 have lost their lives, and 2 are reported missing.

[1] H.M. Stationery Office. To be obtained through any bookseller. (Cd. 8890.) Price 1s. 6d. net.

TRENCH FEVER AND "P.U.O."

WE would direct the attention of our readers—civilian as well as military—to the preliminary report printed in another column, of a committee nominated by Sir Arthur Sloggett to investigate the cases of obscure pyrexias occurring in the army in France, which are variously known nowadays as "trench fever," or "P.U.O."—that is, "pyrexia of unknown origin," as commonly transliterated, but really signifying "pyrexia of uncertain origin." Indeterminate fevers have been very prevalent since the first winter of the war; and although never directly fatal they are the cause of much invaliding and sometimes destroy a man's fitness for military service. The committee and the medical officers associated with them had the advantage of studying a considerable number of unselected patients who were collected at an early stage of their sickness in a hospital set apart for this purpose. The present communication confines itself to an attempt at clinical classification based on an analysis of the notes taken by the medical officers in charge of the cases. Considerations of etiology, pathology, prevention, and cure are reserved for a later report. From the general mass of clinical observations three fairly distinct types of pyrexia emerge: the relapsing, styled for convenience "trench fever"; the single short initial bout of fever, recalling influenza; and the prolonged initial fever, resembling enteric. The first type is divided into regular relapsing and irregular relapsing subtypes. Apart from the course of the pyrexia, however, the four groups are indistinguishable by any clinical test. Headache is invariable, and pains in the limbs and back are common to all, as is a strong tendency to persistent tachycardia when the temperature is subsiding. The report brings out clearly the causal relationship between P.U.O. and many cases of disordered action of the heart. The absence of intestinal or renal symptoms is noteworthy throughout the series. Enlargement of the spleen was fairly frequent—a condition not observed by those who described the earlier cases. It is interesting to find splenic enlargement now definitely associated with P.U.O., because we believe that in the first year or two of the war this sign was generally held to indicate an enteric group infection. The first report of the committee marks a step forward in the precise clinical investigation of a very obscure group of diseases, which, as we have said, are not without interest for civil practitioners in this country. There can hardly be a doubt that trench fever, at least, is infectious. It was first recognized in the trenches, but it began to occur among orderlies in medical units further back where the sick were nursed, and eventually at schools of instruction on the lines of communication to which men were sent from the trenches. McNee, Renshaw, and Brunt, in a paper published in our columns nearly a year ago,

showed that it could be transmitted from one person to another by whole blood. There is strong evidence that the disease was imported into the armies at or near Salonica by troops coming from France, and it is therefore not impossible that it may be imported into this country or may have already been transmitted to persons brought into close contact with soldiers returned from France. The Trench Fever Committee for this country, which sits at the Royal Army Medical College, Grosvenor Road, London, S.W.1, under the chairmanship of Surgeon-General Sir David Bruce, K.C.B., has, indeed, asked that reports of suspicious cases may be sent to it. Sir Wilmot Herringham and his colleagues are very cautious in drawing any conclusions in their preliminary report, but the known facts may, perhaps, justify some speculation as to whether among the cases once common in marshy districts in England, and then commonly called "marsh fever," there may not have been some of the varieties of feverish disorder described in their report. No doubt the majority of the cases in the Fens and in the low marshlands of Kent were malaria, but it seems possible that some may have been instances of the newly recognized disorders, trench fever and its congeners.

THE MEAT POSITION.

MR. CLYNES stated in the House of Commons on January 16th that 10,000 returns from slaughterhouses in Great Britain indicated that in December, 1917, the number of cattle slaughtered for beef was 9.5 per cent. greater than the number slaughtered in December, 1916. The number of live stock in the country, he said, is estimated to be lower than a year ago, so that supplies of home-fed beef for the next four months, equal to those of the same period last year, could only be forthcoming at the expense of a further depletion of our live stock. It is generally believed that during last year the habit of eating much meat has greatly increased among the industrial classes; this is an intensification of a tendency which, for good or evil, has been growing during the last quarter of a century at least. In a well-known "purple passage" Macaulay predicted that "in the twentieth century . . . labouring men may be as little used to dine without meat as they now are to eat rye bread."[1] This expectation has been more than fulfilled, and some general statistics will not be without interest. According to Gregory King, who estimated the population in 1696 as 5,500,000, about 2,700,000 ate meat daily; of the rest, 1,540,000 ate meat at least twice a week, while 240,000 were either sick persons or infants under 13 months old. There remained 1,020,000 persons "who receive alms, and consequently eat not flesh above once a week."[2] Adam Smith observed that "in almost every part of Great Britain a lb. of the best butcher's meat is, in the present times, generally worth more than 2 lb. of the best white bread; and in plentiful years it is sometimes worth three or four lb."[3] We recently gave statistics of the consumption of meat by the English working classes shortly before the war. The figures were as follows: Industrial families in urban districts consumed from 1 lb. 9 oz. to 2 lb. 6 oz. per "man" and week, the lesser amount referring to families with weekly earnings of less than 25s., the greater to those with wages over 40s. No satisfactorily comparable data are available for European families, but we deduce from Slosse and Waxweiler's statistics[4] that even in Brussels and among skilled operatives the weekly consumption of all forms of flesh (including bacon, etc.) was not much more than 3 lb. In Germany, since the war, the most favourable data, those of Loewy,[5] show a weekly consumption of 0.77 lb. to 1.4 lb., the latter figure concerning families with a monthly income of more than 500 marks; the more recent evidence of Berg[6] only reaches three-quarters of a pound weekly with labourers on heavy or very heavy work. In the face of the experience of our ancestors and the long deferred collapse of our enemies, it does not seem necessary to labour the point that a restricted meat diet, although, like the discontinuance of any pleasant habit, a hardship, is far from being a calamity. We do not, indeed, suppose that the meat shortage will continue to be so acute as it is at present, but we see no reason whatever to expect that supplies will again become abundant during the war or until long after its termination. This must necessarily follow from a consideration of the price of fodder, the demand on shipping, and the obvious economy of not interposing a non-human "profiteer" between the source of biotic energy and the human consumer. It is to be remembered in this connexion that 64 lb. of dry fodder are consumed in producing 1 lb. of dry human food in the form of beef.[7] The position, then, has to be faced, and we conceive the course of action incumbent upon the educated and professional classes to be clear. They must, both by precept and example, urge upon the majority of their countrymen the desirability of ceasing to regard meat as a staple article of diet and the need of looking upon it as a mere relish or appetizer. We should like to see not one only but several meatless days introduced into all the clubs and restaurants, and no one should eat meat at home more than once a day. We have time and again urged the psychological importance of example; in this particular matter example is of really supreme value.

[1] Macaulay's *History of England*, Chapter III.
[2] Quoted in Lecky's *History of England in the 18th Century*. Popular edition, vol. ii, p. 205.
[3] *Wealth of Nations*, Routledge's edition (1908), p. 118.
[4] *Enquête sur le régime alimentaire de 1065 ouvriers belges*. Brussels. 1910.
[5] *Deut. med. Woch.*, February 8th and 15th, 1917.
[6] *Zeit. d. deutschen Landwirtschaftsrats*, May, 1917.
[7] Wood: *The National Food Supply in Peace and War*. Cambridge 1917, p. 34.

THE AIR MEDICAL SERVICE.

IN moving the second reading of the Air Force Bill last November, Major Baird, then Parliamentary Under Secretary to the Air Board and now to the new Air Council, said that one of the most important needs was for a specialized Air Medical Service, and he gave more than one cogent reason why a body of men must be obtained whose sole duty would be to concentrate on the new branch of medical science, upon which depend both the welfare of our flying men and the efficiency of the Air Service. To a mind trained in science the proposition is self-evident as soon as it is made. The inference followed that the air authorities had grasped the position in good time, and intended to set up an Air Medical Service to minister to the special and peculiar needs of the new Air Force which is now in its birth throes. This assumption underlay all that we wrote on the subject a fortnight ago, and there would be no need to go over any part of the ground again were it not for a rumour now current that the Air Council has unaccountably weakened in its resolve. Without entering into details, the case against such a reversal of sound policy can be stated in three sentences. The Air Force is to be a separate force distinct from the army and navy, with its own Secretary of State and its own Council. The presumption therefore is that it should be complete in all the branches represented in the other fighting services—that is to say, it should have its own medical service. Hence the onus of proof rests on those who oppose, not on those who advocate, the setting up of an Air Medical Service. We would urge, with all the emphasis at our command, that the Air Force, by reason of its special functions, its immense possibilities of future development, and the peculiar risks to which its personnel is exposed, must from the outset contain within it a specialized medical corps devoting the whole of its time and talents to the medical and physiological problems of flying, and the professional care of aviators and their retinue. It will not do for the Air Force to be served by medical officers doled out by the War Office and the Admiralty for uncertain periods of duty. We need only turn to Surgeon Graeme Anderson's paper on the medical aspects of aeroplane accidents (p. 73)

to realize that a practical interest in aviation is an indispensable quality in an air medical officer. Only within an Air Medical Service will it be possible to create a trained medical personnel graded according to the capacity of each individual for specialized duties, such as research work in hospital or laboratory, the medical charge of aerodromes and air hospitals, or the testing of physical fitness for aviation.

WITTENBERG PRISON CAMP.

AT a meeting of the West London Medico-Chirurgical Society on January 13th, with Dr. A. J. Rice-Oxley, President, in the chair, one of the two gold medals of the society awarded last year was presented to Major Harold Edgar Priestley, C.M.G., R.A.M.C., in recognition of his devotion to duty during the typhus epidemic in Wittenberg Camp, Germany, from February to June, 1915. The President said that Major Priestley, in addition to his sufferings as a prisoner of war, had been twice torpedoed in the last ten months, and was now on sick leave from abroad. When he arrived at Wittenberg there were 12,000 prisoners of war and a number of civilians, but there were practically no drugs or medical appliances, and no proper sanitary arrangements. When typhus fever broke out, the German principal medical officer, Dr. Aschenbach, played the coward and fled the camp, and his colleagues did the same. Major Priestley thereupon devoted himself to the sick and dying until he fell ill himself. In returning thanks, Major Priestley spoke of the callousness and brutality of the German guards and the sufferings of his fellow prisoners, who, in spite of cruelty, hardship, and disease, never lost their courage or discipline. He paid a warm tribute to the work of his colleagues at Wittenberg; of the five medical officers two only have survived. In accepting the medal, Major Priestley said he regarded himself as holding it in trust for all those splendid men.

MEDICAL STUDENTS IN THE RANKS.

AT the present time the withdrawal of medical students from combatant service in order to resume their studies is governed by Army Council Instruction 1751, the provisions of which were summarized in the JOURNAL of December 8th, 1917. Under this instruction students who at the time of their enlistment were engaged in medical studies and had completed their second year may, if they so desire, be released for the purpose of continuing their studies with a view to qualification. Students who do not pass the professional examination in anatomy and physiology within six months of resuming study will be recalled to the colours, and a student transferred to the Reserve who does not resume his studies and enrol in an officers' training corps will be recalled. The usual official steps have been taken to bring the instruction to the notice of all students serving with the colours, whether at home or abroad; but it is evident that in front-line formations, during periods of stress, information of this sort published in battalion orders may never reach those for whom it is intended. Here it may be pointed out that the official object in releasing medical students from the ranks is not to remedy individual cases of hardship, however desirable that may be, but to maintain the number of students in training at a level sufficient to produce an adequate supply of new medical practitioners for national needs. To effect this purpose more adequately, we understand that Army Council Instruction 1751 will shortly be amended, and that the Ministry of National Service will take steps to ensure that so far as possible all those concerned are made aware of the revised regulations.

SHELL-SHOCK PATIENTS IN AIR RAIDS.

EARLY in November a question was asked in the House of Commons with regard to shell-shock patients at the 4th London General Hospital, and other similar cases at Golder's Green, the suggestion being that the condition of these men is aggravated by air raids and that they ought to be removed to a quieter neighbourhood. In a non-committal reply Mr. Macpherson said that it might be possible, in connexion with changes then being made, to discontinue the neurological centre in London as a treatment centre; he added that the inquiry as to Golder's Green should be addressed to the Minister of Pensions. In a letter printed in the JOURNAL of November 24th Dr. Thomas Lumsden maintained that however convenient it may be for the authorities, it is bad treatment to congregate nerve-shattered men in hospitals unless the severity of their symptoms renders this unavoidable, and that it is unpardonable to keep even the serious cases in a town like London, where air raids are frequent. The description which he quoted of the effect of an air raid on nerve-shattered men was very painful to read, and we are assured by several informants that that account in no way exaggerated the state of things on such occasions. There can be little doubt that shell-shock patients are extremely liable to relapse under the mental stress of an air raid, and when cases of varying degrees of severity are grouped together at such a time the good effects of months of treatment may be undone in the course of a few minutes. We regret to have to add that so far as we can ascertain nothing has yet been done towards the early removal to the country of men suffering from war neuroses. The change would be in the interests of the patients, of economy of medical man power, and therefore eventually of sound administration.

Medical Notes in Parliament.

Reassembling of Parliament.—When the House of Commons reassembled on January 14th, the Minister of National Service moved the first reading of the Man Power Bill in a very detailed speech. In the course of it he said that he wished he had the opportunity then to describe the reforms which had been introduced in the system under which men are medically examined. The old system had been replaced by a new one which, though it still showed a few raw edges, was a vast improvement on the old. He wished, too, that he could stop to tell of all the work that had been done to co-ordinate the demands of Government departments for medical men, and to ensure an adequate supply of medical practitioners to meet the nation's needs in 1920, 1921, and the years following. The efficient working of the recruiting and medical machines rested finally upon a complete and accurate system of registration. He welcomed, therefore, the measure Mr. Hayes Fisher had introduced to complete that work of registration.

Education Bill.—The Education Bill was introduced by the Minister for Education, on January 14th, under the ten minute rule. The bill, he said, was substantially the same as its predecessor, and attention to physical welfare remained a special and distinctive note, but certain of the administrative clauses had been omitted or amended. The clause with regard to medical inspection of schools and educational institutions reappears unaltered.

Medical Attendance at Military Hospitals.—On January 12th Sir R. Cooper asked a question which suggested that the recent replacement of British medical practitioners in military hospitals by American practitioners had broken down, and that British practitioners had been requested to return temporarily to work in the military hospitals. Mr. Macpherson replied that the facilities given to the American Government to enable its officers to obtain experience of war injuries had not broken down. The number of practitioners employed in military hospitals varied with the number of patients in them.

Treatment of Neurasthenics.—In reply to a question by Mr. King, the Parliamentary Secretary to the Ministry of Pensions said that there was no power to keep men discharged from the army under control, but institutions were being provided in which the severer cases of neurasthenia might be suitably treated. Two such institutions had been opened, and others would be ready for occupation shortly. The Ministry was advised, however, that the milder cases of neurasthenia should not be retained in institutions, and that it would not be to their advantage to be placed under the care of lunacy experts. In reply to a further question, he said that one of the new institutions was in the raid area of London, but none of the others now being got ready were in that area. When provision had been obtained outside, the advisability of moving the present institution would be considered.

THE WAR.

PRELIMINARY REPORT OF THE COMMITTEE UPON TRENCH FEVER AND PYREXIA OF UNKNOWN ORIGIN.

DURING the winter 1914–1915 many cases were admitted to hospital for "myalgia," "influenza," "neuritis," and even "rheumatic fever," which had as common symptoms pyrexia and local pains. In April, 1915, attention was drawn to a new kind of fever which was marked by relapses. It was described by Graham,[1] by Hunt and Rankin,[2] and by McNee, Brunt, and Renshaw;[3] Hurst[4] later described it at Salonica. Little has been added to their accounts. The name "trench fever" was given to it, since it arose in the front area. It was not found to originate on the lines of communication until the establishment of schools of instruction, to which men came from the front area, created foci of infection. It is to this form that attention has hitherto chiefly been directed. McNee found that he could convey the infection by injecting the whole blood or the red cells, but not by injecting the serum alone. But beyond this little has been learnt of its pathology. Pappenheimer[5] described certain forms seen in the blood, and obtained by culture from the blood and tissues, but these were found to occur in other conditions also. Patterson,[6] and later Nankivell and Sundell,[7] described spirochaetes in the urine of these cases, but similar spirochaetes were found in the urethra of healthy men.

Dimond[8] described a body which he called a haemogregarine, and the same body was found by Patterson, Perry, and Urwick, but it was proved to be a flagellate growing in the distilled water which had been used in preparing the blood films. No organism has yet been discovered which can be connected with this form of fever.

But it was always known that along with this relapsing form many cases occurred in which the temperature ran a very different course. These cases were mentioned by Hunt and Rankin, but have never been carefully observed or described.

These various forms of fever of unknown origin have been very prevalent; for every case of enteric there have been at least twenty of these indeterminate and innominate fevers. And though they never cause death, yet they often lead to a very long period of incapacity and sometimes to discharge from the service for ill health. They are therefore of great importance to the army. Accordingly the D.G.M.S. of the army in France nominated a committee, consisting of Lieut.-Colonel W. O. O. Beveridge and Colonels Sir John Rose Bradford, Sir Wilmot Herringham, and Sir William Leishman, to examine and report upon them. No. — Stationary Hospital was selected for the reception of the patients, and, by arrangement with the D.M.S. of the army, and the D.D.M.S. of the corps in whose area the hospital was situated, the cases were sent in direct from the field ambulances as soon as they arrived. In this way a large number of unselected cases were obtained at an early date of their illness which had this common feature alone, that they were at their onset of unknown origin. They formed, in fact, a sample of P.U.O. in bulk as nearly representative as it could be made.

The cases were under the care of Lieut.-Colonel B. B. Burke, officer commanding the hospital, Captain Horsley Drummond, officer in charge, medical division, and Captain Urwick, pathologist, and in charge of wards. In October the services of Captain Perkins were obtained as special pathologist for these cases. It is an advantage that as there is an isolation hospital attached to No. — Stationary Hospital, cases found to be the subject of enteric fever could be transferred, and a comparison made with cases that were not enteric.

The aims of the Committee were:

1. To determine whether these cases of unknown pyrexia include more than one class of fever, and, if so, to classify them.
2. To observe the symptoms distinctive of each class that might be established, and thereby to distinguish one class from another, and from all known fevers.
3. To investigate the etiology and pathology of these fevers.
4. To discover the best means of prevention and cure.

It is upon the first two of these objects that the Committee desires to offer a preliminary report drawn from an analysis of the clinical notes taken by the medical officers. The report, however, is incomplete even under these headings, for it does not include a number of observations upon certain symptoms, and upon the condition of the blood, which are still in progress, nor does it deal with the diagnosis from enteric and influenza. In the present series, the object of which was to obtain a general picture of the cases diagnosed as P.U.O., a few cases of enteric are known to be included. They are, however, so few that the general conclusions are not thereby invalidated. This will be considered at length in the next report.

CLASSIFICATION.

After consideration of other principles, the only classification that seemed at all satisfactory was that based on the character of the temperature chart. These fall into three classes—

A. The relapsing class (trench fever).
B. A class with a single short initial bout of fever and no relapse.
C. A class with prolonged initial fever.

It gives perhaps a more vivid picture if it be added that Class B recalls influenza, and Class C an enteric fever.

The total number of cases is 170 in which there is only one officer. Of these the relapsing class A includes 91 cases, B includes 27 cases, and C 52 cases.

They were all in hospital during July, August, and September, 1917. It may be that the autumn and winter cases will show modification of the symptoms now reported.

CLASS A.—TRENCH FEVER.

91 Cases.

The cases in this class are divided into—

1. Regular relapsing, with definite normal intervals =56 cases.
2. Irregular relapsing, in which the intervals between the relapses are not so definite, or if the intervals are definite the temperature remains above the normal=35 cases.

It seems indubitable that these cases belong to the same class, but it is important to notice that there is both a true intermittent and a remittent variety. In the following analysis of symptoms the whole class is taken as one. (See Charts 1, 2, 3, illustrating A 1; Charts 4, 5, illustrating A 2.)

Previous History.—In 9 cases a previous attack of P.U.O. was known or probable. In 2 cases a previous attack of malaria was known or probable.

Immediate Antecedents.—The cases occurred in all situations—trenches, dug-outs, canvas, huts, and billets. Lice were present within twenty-one days in all but 18 cases. Mosquitos had definitely bitten 22 patients.

Prodromal Symptoms.—In very few cases. Coryza in 4, diarrhoea in 3, constipation in 4, malaise in one.

Onset.—Sudden in all but 9 cases. Usually the patient could tell what he was doing at the time. There is nothing else peculiar in these 9 cases.

Initial Symptoms. — *Headache* was invariable. It was nearly always frontal, and often referred to the back of the eyes. There was often conjunctivitis (pink eye). *Shivering* occurred in 24 cases, *dizziness* or *giddiness* in 33, several complained of weakness or faintness, and four actually fell down. There were *pains* in the back or lower limbs in most cases. In a few there was no pain other than headache at the onset, and in six this was the only pain throughout. *Vomiting* took place in 24 cases, and *nausea* in 4 others, *diarrhoea* in 4 cases, *sore throat* in 6.

On Admission.

The patients complain of headache and pains in the lower limbs, usually in the thighs and knees. They often look very toxic, and are flushed and sometimes drowsy. The tongue has a central streak of yellow or brown fur with red edges, the appetite is bad, the bowels constipated.

There is no distension of the abdomen. There is no abnormality in the heart or lungs. In 10 cases there was a trace of albumin, which disappeared in two or three days.

Course and Progress.

1. The *temperature* chart is marked by a series of bouts of fever, in which the temperature as a rule rises rapidly, and falls rather more slowly. In some cases the rise is gradual. Taking the first bout as an example, the temperature on the first day was known in 18 cases. Of these, in 10 cases

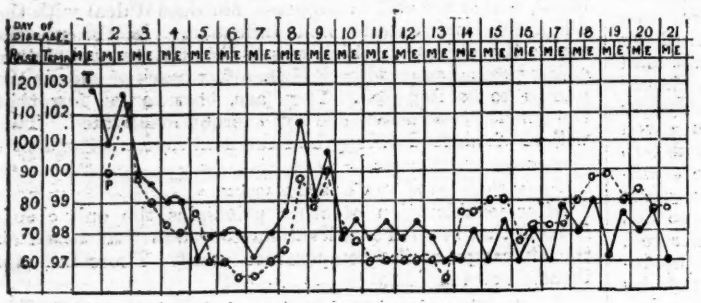

CHART 1.

it was highest on the first day. In 3 cases it was as high on the second day as on the first day. In 5 cases it was highest on the second day. The acme is usually between 102° and 103° F., but is sometimes higher. The temperature is always falling by the third day.

The first bout lasted in 1 case one day, in 6 cases two days, in 18 cases three days, in 15 cases four days, and in 6 cases five days. In the great majority, 33 out of 46, it lasted three or four days.

The bouts vary greatly in number. Most patients have three or four bouts. One of this series, who seemed to be reinfected about the thirtieth day, had as many as seven.

If the acme of each bout be noted, or, supposing there are two days on which the temperature is equally high, the first of the two be called the acme, it will be found that there is a considerable regularity in its occurrence. Thus in the regular group the following sequences are found. The numbers are the days on which the acme of each bout was registered:

Case 42: 1, 5, 10.
Case 40: 1, 6. *Case 32:* 1, 6, 11. *Case 30:* 1, 6, 11, 17, 24.
Case 13: 1, 6, 12, 17, 23. *Case 43:* 1, 6, 12, 18, 24.
Case 38: 1, 6, 13.
Case 31: 1, 7, 12, 18. *Case 18:* 1, 7, 14, 23.
Case 10: 1, 8. *Case 17:* 1, 8, 16, 23. *Case 1:* 1, 8, ?17.
Case 11: 2, 8. *Case 8:* 2, 8, 14. *Case 15:* 2, 8, 16.

There is a tendency for the acme to postpone as the disease progresses. There is also a tendency for the highest point to become gradually lower with each bout, as in Chart 2.

As a rule, when the bouts cease the temperature remains normal, or under 99° F. But in some there follows a period of irregular fever, which may sometimes last several weeks (Chart 6).

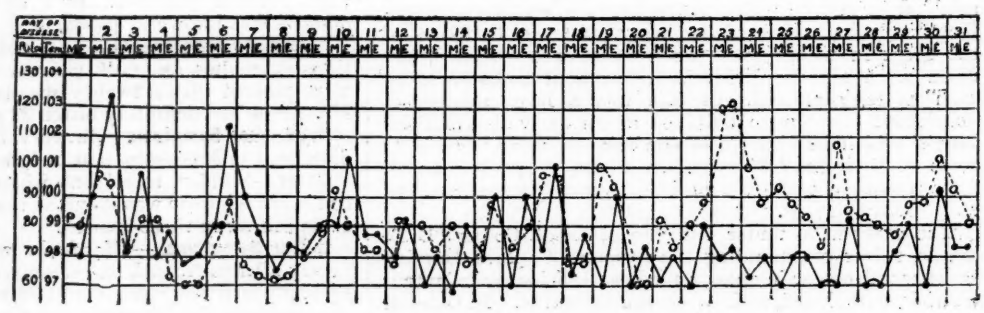

CHART 2.

2. The *pulse*, which is commonly about 100 during the first bout, falls to about 70 as the temperature sinks to normal, and rises again, though not to so great a height, during subsequent bouts. It is the rule that it varies with the temperature so long as the bouts continue to appear. But at a later stage there has been in many cases great disturbance of the circulation. The pulse has become frequent, the heart has dilated under observation (the apex once went as far as 2 in. beyond the nipple), and a faint systolic bruit has been heard. The apex usually retreats again, and the bruit ceases to be heard if the patient is retained. These cardiac signs appear to be due to dilatation alone, and there has been no reason to believe that endocarditis had been present. Since the plan was adopted of keeping almost every case in bed for twenty-one days tachycardia has been much less frequent. Yet it has appeared in several cases while the patient was still in bed, and, when it has appeared after the patient had got up, it has not been quickly relieved by putting him to bed again. There is no reason to suppose that the cases under observation were worse than the average, and it seems, therefore, probable that many cases of disordered action of the heart take their rise in trench fever. Chart 7 shows a remarkable degree of the condition.

In the whole 91 cases there were 24 in which severe tachycardia existed. Five of these patients complained of precordial pain, and in one the pain spread down to the left arm.

3. When trench fever was first described in 1915 the *spleen* was not found to be enlarged. In 1916 several cases of splenic enlargement were seen, and in the present series the spleen was definitely palpable below the ribs in 35 cases out of 91. One of the committee has been observing trench fever at the front from the beginning, and has no doubt that the proportion of cases which show this feature has increased.

The enlargement, or rather the extent of the organ which can be felt, is small. An inch or an inch and a half below the margin of the ribs is rarely exceeded. Four cases have shown greater enlargement than this, but of them one certainly and one probably were the subjects of old malaria. In these four the spleen was palpable the whole time the patient was in hospital. In 12 cases the spleen was palpable on admission, in 1 eleven hours, and in 1 seventeen hours from the onset.

It retreated behind the ribs before the twenty-fourth day in 21 out of the 35 cases in which it was palpable. But in 2 of these it reappeared later and in others it retreated and reappeared within the period of twenty-four days. It sometimes reappears during the relapses. It is probable from this that the spleen is often enlarged when it cannot be felt. It is sometimes tender, and to this are due the pain and tenderness in the left hypochondrium which were noticed by earlier observers, and were found in eleven patients of this series. This hypochondriac tenderness and the accompanying rigidity may occasionally prevent the spleen being felt.

4. Almost every patient complains of *pains* in various parts during the course of the disease. Apart from headache, which is universal and often very persistent, the most frequent site of pain is the lower limbs. All parts of these—thighs, knees, calves, shins, and ankles—are affected. The shin pains, which occurred in 44 cases out of 91, are described as in the bone itself. There is nothing outwardly to account for them. There is no thickening as in periostitis, and though the shins and other painful parts are sometimes tender, yet in many cases there is no tenderness, though the pain is severe enough to prevent sleep. Captains Drummond and Urwick have found tender areas, ill defined, in the skin of the legs, and in several cases hyperaesthetic zones corresponding to the distribution of one or two of the lower dorsal or lumbar roots. But they have never up to now found either subcutaneous nodules or anaesthetic patches, weakness or wasting of muscles, or tenderness of the nerve trunks, such as occur in true neuritis. The upper limbs are occasionally the site of pain. Backache is very common.

These pains vary from day to day in such a manner as to suggest malingering. Those, however, who have watched the cases are convinced that the complaints are

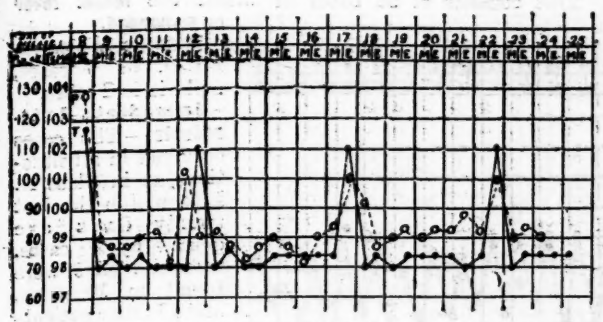

CHART 3.—This chart we owe to Lieut.-Colonel J. Clarke and Captain Parr. The case was seen by one of us in consultation, but is not of our series. It was typical. The patient felt quite well during the intervals, except for rather persistent headache. The remarkable character of the chart led to careful observation by Captain Parr and the sister in charge, who can vouch for its accuracy.

genuine. As examples of their fleeting character, two cases may be quoted:

Case 6.

1st day, headache and pain in loins and thighs.
2nd day, pain in loins, thighs, knees, and calves.
18th day, pain in knees.
21st day, pain in thighs and knees.
33rd day, pain in legs (not shins).
42nd day, pain in legs and back.
56th day, pain in calves and back.

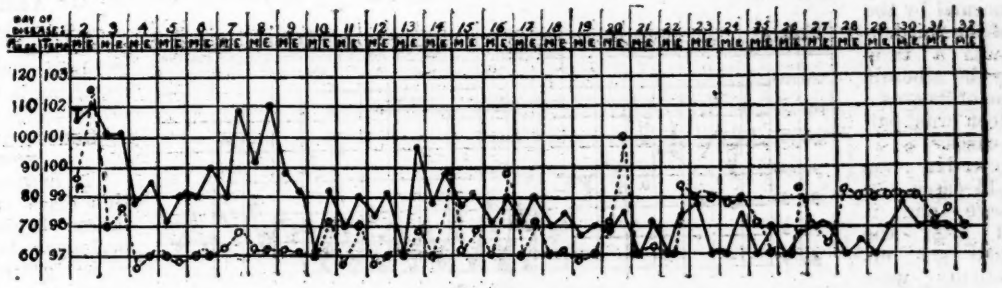

CHART 4.

Case 31.

1st day, headache and pains in the abdomen, shins, and knees.
8th day, no pain.
12th day, pains in left side of chest (pulse normal).
15th day, no pain.
16th day, pain in left side of chest and shins.
19–26th day, no pain.
30th day, pain in shins.
34th day, pain round loins.
39th day, pain in back.

5. The *respiratory* system has been unaffected in this series of cases. The climate in this part of France is, however, extremely wet, and coryza and bronchitis are rife for a great part of the year. At such times patients with trench fever often have coryza and bronchitis. But they seem no part of the disease itself.

6. The *tongue* cleans and the appetite returns in a few days. Constipation is common.

7. There has been no *renal* affection in this series except in a few cases, the transient albuminuria mentioned above.

8. *Herpes* about the lips is not uncommon. In a considerable number of cases, in which there was no suspicion of enteric, *small erythematous spots* have been found, roundish in outline, level with the surface, and fading on pressure. One of the patients in whom these spots were seen had never been inoculated against enteric, but showed no rise in agglutinations, and gave no result to cultures of blood, urine, or faeces. It is rare to meet with a man who has not been inoculated, and such an example is conclusive. Similar spots have been found in cases admitted for slight surgical ailments without pyrexia. These spots sometimes occur with relapses of the fever. A subsequent report will furnish further details on these spots.

To a further communication is also left the full account of the bacteriological examinations, and of certain other clinical symptoms.

Event.

Of the total number 32 were discharged to duty, of which 21 were in hospital over five weeks, and the remainder were evacuated to the base. Fourteen were evacuated rather early because of pressure on the hospital accommodation. Nineteen were evacuated for tachycardia, of whom 10 had dilatation of the heart. Four others had dilatation without tachycardia. Five had fever still continuing after thirty days or more of illness.

CLASS B.

In this class were placed (*a*) those cases in which there was only **one short initial bout of fever**, lasting under six days, and (*b*) those cases in which the illness was not observed or recorded during the first days and showed no definite relapses or high fever, but was diagnosed as P.U.O. The total number is 27.

It has sometimes been stated that there are cases in which the temperature never rises above 100° F. even at the first, but remains slightly febrile for many weeks, and that this class of cases is marked by unusually severe pain. Some have even coined the name "shin fever" for cases so described. A long low fever not infrequently occurs after the regular relapses of Class A, such as is illustrated in Chart 6. It remained to be seen whether this ever occurs without an initial bout.

There are 9 cases out of the 27 in which no initial bout is known, but in four of these the patient was not seen till the third day, two were seen on the fourth day, one on the fifth (an officer who said his temperature had been 101° F.), and two later. So that in none could it be said that there had not been an initial rise. The remaining 18 cases all showed a definite initial fever.

There is therefore no evidence of a prolonged low fever without an initial bout.

On the other hand, while some cases have both a persistent fever and persistent pains, the two do not by any means always coincide. The case illustrated in Chart 6 had pains for at least seven weeks, but the preceding case in the series (A 1, 32), though showing a very similar chart, had but slight pain. In the present class, No. 16 shows a chart like Chart 6, but had no pain after the tenth day; while No. 22, though hardly ever above normal

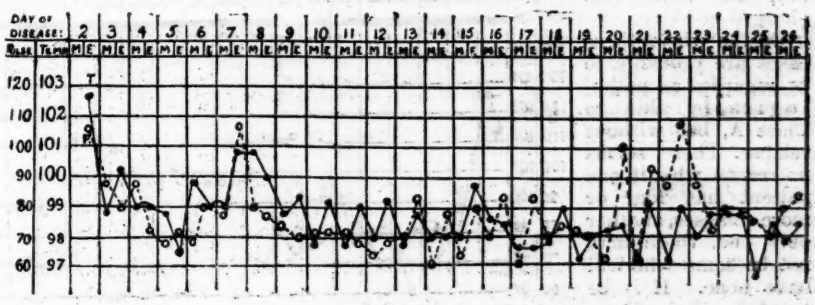

CHART 5.

after the second day, complained of pain for forty-nine days.

It is not necessary to record minutely the symptoms of this class. In the absence of prodromal symptoms, the sudden onset, the initial symptoms, and the character of the pains, it does not differ from Class A, but, as might be anticipated from the absence of relapse, there is a considerable proportion of cases in which the pains soon disappear.

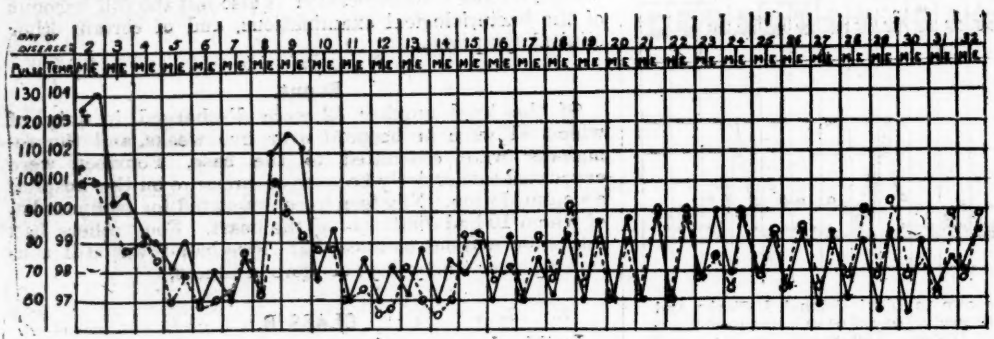

CHART 6.—The temperature remained at the same level (99°–100°) until the sixtieth day, when the patient was evacuated. There was no local condition to account for it.

Of 18 cases available the initial fever lasted in 2 cases only one day, in 4 cases two days, and in 4 cases possibly five days. Of 7 cases in which the first day's temperature was known, 6 showed the acme on the first day and 1 case on the second day. In 1 case the temperature reached 106° on the first day and was normal by the morning of the third.

There was a transient trace of albumin in the urine of 2 cases.

The spleen was palpable in 7 cases.

Tachycardia was severe in 13 cases, but in all save one it occurred after the patient had got up. These patients were ordered out of bed earlier than the relapsing class, as they seemed to have shaken off their fever. The increased proportion of tachycardia was probably a result of this. The single exception had a rapid pulse when admitted and was of the type that Lewis has particularly associated with tachycardia. One patient, on the other hand, had an unusually slow pulse. On five days it was registered between 50 and 60, and on four days it was counted at 48. He was in bed throughout, and though this temperature never rose above 99° after the fifth day, he suffered much with pain until the twenty-seventh day, when he was sent to the base.

Of the whole number, 16 were discharged to duty.

On the whole, these cases are probably to be regarded as pathologically akin to Class A, but without relapse. There seems no reason why, if one patient has four or more relapses, another only one, there may not be some who will have none. If it be granted that these patients are infected by some poison against which they produce an antibody, it may be possible for some to form this much more quickly than others.

This seems more reasonable than to link them with the prolonged initial fevers of Class C, next to be described. But there is a great difficulty in excluding influenza. Reference will be made to this in a subsequent communication.

CLASS C.

This consists of 52 cases in which the **initial fever is prolonged.**

Previous History.—P.U.O. in 4 cases, malaria in 2 cases.

Immediate Antecedents.—The cases occurred in all situations, as in Class A. Lice within the last twenty days are denied by 7 cases, mosquito bites were found in 10 cases, and 13 other patients had noticed mosquitos.

Prodromal Symptoms.—Slight symptoms were present in 8 cases before the onset of the fever.

Onset.—Sudden in all but 8 cases.

Initial Symptoms.—*Headache* was again invariable, and was usually frontal. *Shivering* and *giddiness* were as common, and the same weakness of the legs was observed. *Pains* in the back and lower limbs were again common. *Vomiting* took place in 14 cases during the first two or three days, and *diarrhoea* in four. There was *sore throat* in seven.

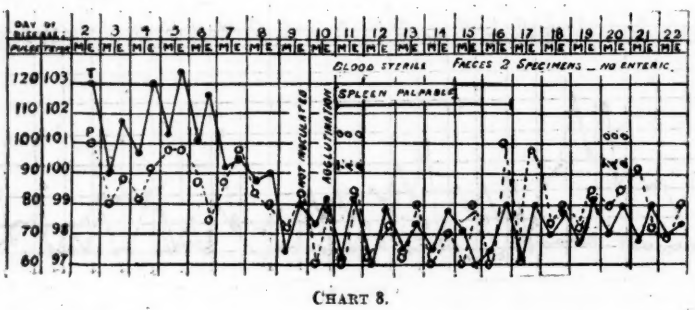

CHART 8.

On Admission.

The symptoms were practically indistinguishable from those occurring in Class A.

Course and Progress.

The cardinal point of this class is that the illness begins with a prolonged fever. This varies greatly both in duration and character. In 19 cases it lasted from six to nine days inclusive; in 20 cases it lasted from ten to fourteen days inclusive; and in 13 cases it was still more prolonged.

In some cases the chart has a curve that is roughly uniform, reaching its highestpoint about the middle (the hog-backed form, Chart 8). Some have their highest point at the beginning, and descend regularly (Chart 9). Some intermit for half a day or so, usually between the second and seventh days. And some recall the irregular relapses of Class A 2. As such cases should always be suspected of enteric, the cultural and agglutinative tests have been added to these charts.

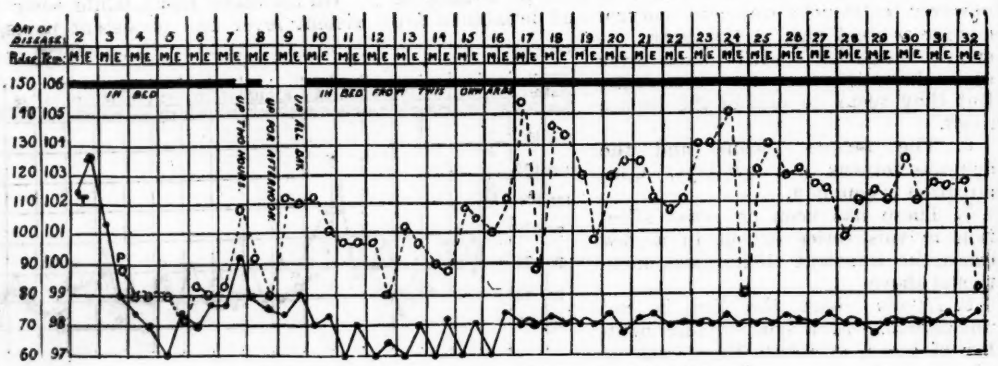

CHART 7.—Evacuated in same condition on thirty-fifth day.

This initial fever is often followed by a period of normal or subnormal temperature (13 cases), but in some there is no such normal period and the temperature remains irregular for a long time, and in a third group a normal

period is followed by bouts of irregular fever somewhat recalling Class A 2.

The pulse usually follows the temperature in this class as in Class A, but there were 13 cases in which it remained at about 90, and in 2 it was very irregular throughout.

Tachycardia supervened in a severe form in 16 cases, and was the cause of most of the evacuations to the base. It usually began in the third week. Ten patients had not been out of bed when the condition set in. In several cases tachycardia lasted until the fiftieth day or longer, though the patients were kept in bed. Fourteen cases were sent to the base on this account. Dilatation of the heart was noticed in 14 cases.

The situation and character of the pains do not differ from those of Class A.

Splenic enlargement was found by palpation in 22 cases. In two patients, of which one had had malaria, it was palpable throughout the stay in hospital. Albuminuria to a very slight degree was found in 8 cases. It was transient in all but one. In that case the urine did not clear till the twenty-fourth day, but at no time contained casts.

Of the whole 52 cases, 22 were discharged to duty. The remainder were evacuated.

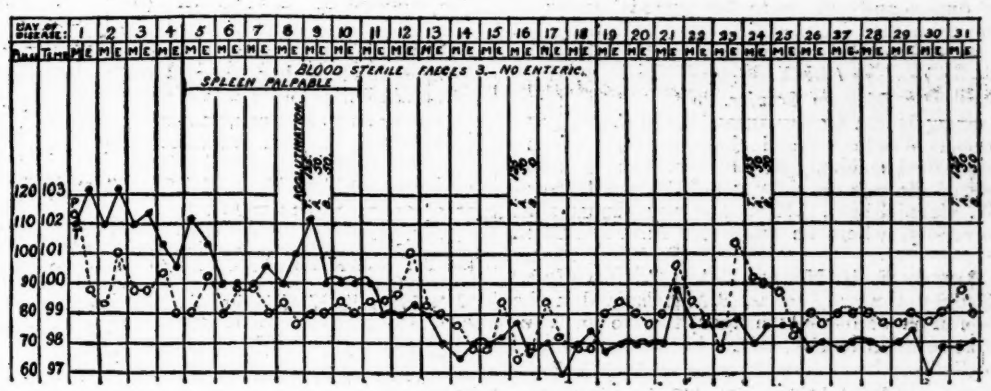

CHART 9.

CONCLUSIONS.

1. There are three forms of fever of unknown origin (P.U.O.) now prevalent: the relapsing (trench fever), the single short initial bout, and the prolonged initial fever.

2. These three are indistinguishable from one another by any other symptoms than the course of the pyrexia.

3. All exhibit similar pains, all produce enlargement of the spleen, none show intestinal or renal symptoms of any importance, and all are apt to produce tachycardia.

REFERENCES.

[1] Graham: *Lancet*, September 25th, 1915. [2] Hunt and Rankin: Ibid., November 20th, 1915. [3] McNee, Brunt and Renshaw: BRITISH MEDICAL JOURNAL, February 12th, 1916. [4] Hurst: *Lancet*, October 14th, 1916. [5] Pappenheimer, Vermilye and Mueller: BRITISH MEDICAL JOURNAL, October 13th, 1917; and Pappenheimer: Ibid., October 27th, 1917. [6] Patterson: Ibid., September 29th, 1917. [7] Nankivell and Sundell: *Lancet*, November 3rd, 1917. [8] Dimond; Ibid., September 8th, 1917.

THE MESOPOTAMIA DISPATCH.

APRIL–SEPTEMBER, 1917.

THE dispatch of Lieutenant-General Sir Stanley Maude, K.C.B., Commanding-in-Chief, Mesopotamian Expeditionary Force, dated October 15th, 1917, for the period April 1st to September 30th, was published in the *London Gazette* on January 10th.[1]

During the five months ending April there had been continuous fighting, and during that month the enemy was driven back on divergent lines with the capture of 3,000 prisoners, 17 guns, and a considerable quantity of rolling stock and booty. All objectives had been secured, but the increasing heat rendered it necessary to redistribute the troops for the hot weather, and to make every possible provision to guard against the trying hot period approaching. The bulk of the troops were withdrawn into reserve and distributed in suitable camps along the river banks, where they could obtain the benefit of such breezes as blew, and where a liberal supply of water for drinking, bathing, and washing was obtainable. The heat was intense during the later part of June, in July, and at the beginning of August; consequently movements could not be undertaken by either side without grave risk of incurring substantial casualties from heat-stroke and heat exhaustion. The troops enjoyed a well-earned respite during the five months May to September. Sports, which are so essential to the well-being of the soldier, especially when temporarily inactive in a military sense, were freely indulged in, with beneficial results to the health and future fitness of the army for service in the field. Minor operations were, however, carried out during May, June, and July, and on July 8th Sinn El Zibban, on the Euphrates, was occupied. A further advance was interrupted by a blinding sand storm and a heat wave.

Active operations on the Euphrates were resumed on September 26th, and Ramadie was entered on September 29th, the Turkish commander and his staff being captured. During these operations the heat by day was considerable, and as they were conducted at some distance from the river they were only rendered possible by the excellence of the arrangements for water supply. The captures included 3,454 prisoners, of whom 145 were officers, 13 guns, 12 machine guns, 2 armed launches, 2 barges, and large quantities of arms, ammunition, equipment, and stores. The dispatch contains the following reference to medical arrangements. Unfortunately before it could be received Sir Stanley Maude had himself succumbed to cholera.

> The health of the troops during the summer months has been uniformly satisfactory, and many of the diseases from which we suffered in previous years—such as cholera, enteric fever, and scurvy—were either non-existent or negligible in their extent. This successful result was partly attributable to the untiring work of the officers employed in the bacteriological laboratories, without whose valuable assistance the difficulty of dealing with the epidemic diseases would have been considerably increased. But, although better conditions as regards accommodation and increased facilities for combating the heat resulted generally in a far lower sick-rate, an abnormal heat wave which swept over the area in July was responsible for a heavy casualty list. During this time the personnel of the medical services were severely taxed, but they resolutely and successfully responded to the calls made upon them. All ranks redoubled their exertions as the situation became more difficult, and the unremitting labours of the nursing sisters, many of whom suffered in health themselves, were worthy of the high record for devotion to duty which the nursing service has always maintained. The very practical assistance rendered by the British Red Cross Society and Order of St. John during this trying period was typical of the valuable services so consistently rendered by that organization.

* The preceding dispatch was noted in the BRITISH MEDICAL JOURNAL, July 14th, 1917, p. 60.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died.

SURGEON E. Z. STIRRETT, R.C.N.

Surgeon Ernest Zavitz Stirrett, Royal Canadian Navy, whose death occurred in Toronto on June 22nd last, was born at Port Huron, Michigan, in 1889. He was educated at Toronto, and graduated from the university there in 1915. Soon after the outbreak of war he offered his services to the military authorities, and obtained a commission in the R.A.M.C. A few months later he was appointed ship's

surgeon on one of the Allan Line steamers, and soon afterwards was transferred to duty on transports. He was subsequently appointed surgeon to the Patrol Fleet of the Royal Canadian Navy. His health, however, had been failing for some time, and at last he was obliged to give up his duties and return to his parents' home in Toronto, where he died a few weeks later at the age of 28 years.

ARMY.

Died on Service.

CAPTAIN R. W. CUNNINGHAM, A.A.M.C.

Captain Robert Wiseman Cunningham, Australian Army Medical Corps, died suddenly at Latrobe, Tasmania, on December 10th. He was the elder son of the late Surgeon-Major R. W. Cunningham, I.M.S., and was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1916.

CAPTAIN S. H. MORRIS, R.A.M.C.

Captain Sydney Herbert Morris, R.A.M.C., died in the London Hospital on January 11th, aged 42. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1899. After filling the posts of house-surgeon at the Seamen's Hospital, Greenwich, and at the Poplar Hospital, he went to South Africa, where he served as district surgeon, and later as acting principal medical officer to the British South African Administration, and was also a Justice of the Peace for North-East Rhodesia. On his return to England he went into practice at Frizington, in Cumberland, where he held the appointment of parochial medical officer and public vaccinator, certifying factory surgeon, and medical officer to the Post Office, till he took a temporary commission in the R.A.M.C.

CAPTAIN S. G. SCOTT, R.A.M.C.

Captain Samuel Godfrey Scott, R.A.M.C., died on January 6th in a casualty clearing station, on active service, of pneumonia, aged 42. He was the eldest son of the late Canon S. G. Scott, and was educated at St. Thomas's Hospital and at Oxford, where he graduated B.A. in 1897, and M.A., M.B., and B.Ch. in 1902. After serving as clinical assistant in the throat department at St. Thomas's, and as demonstrator of pathology in Leeds University, he returned to Oxford, where he held the post of demonstrator of histology to the university, till he took a temporary commission in the R.A.M.C. He was the author of numerous contributions to the medical and scientific journals.

CAPTAIN C. G. SHERLOCK, R.A.M.C.

Captain Charles Gregg Sherlock, who is reported as having died on service in Bagdad on November 14th, 1917, was the eldest son of Mr. Henry Gregg Sherlock, F.R.C.S.I., Professor of Dentistry at the Royal College of Surgeons, Ireland. He received his medical education at the School of Physic, Trinity College, Dublin, took the degree of M.D.Dubl. in 1907, and joined the R.A.M.C. in August, 1908. He was in India when war broke out, and was sent to Mesopotamia in May, 1917. As a student Captain Sherlock played for the University Hockey Team. He was the first medical officer attached to the medical unit of the Dublin University O.T.C., and much of the success of this unit, which has sent so many men into the R.A.MC., was, in its early days, due to his energy, popularity, and ability. Captain Sherlock was present at the successful T.C.D. dinner organized at Bagdad last September, which was honoured by the presence of the late General Maude. At the time of his death Captain Sherlock was 35 years of age.

Lost at Sea.

DR. H. L. BURGESS, W.A.M.S.

Dr. Harold Lynch Burgess, of the West African Medical Staff, was recently lost at sea. He was educated at the London Hospital, where he gained a prize for surgery in 1898, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1903, and the certificate of the London School of Tropical Medicine in 1905. After filling the posts of house-surgeon and casualty officer at the North-East London Hospital for Children he joined the West African Medical Staff. In 1913 he was seconded for special service at the Colonial Office, and had since served as medical secretary to the Advisory Medical and Sanitary Commission for Tropical Africa, and to the West Africa Yellow Fever Commission.

Wounded.

Captain J. G. Hill, R.A.M.C. (T.F.).
Lieutenant G. H. G. Davie, R.A.M.C. (temporary).
Lieutenant J. W. Lindsay, R.A.M.C.(temporary).

Prisoners of War.

Lieut.-Colonel H. C. D. Rankin, R.A.M.C.
Captain H. D. Clementi-Smith, R.A.M.C.(T.F.).
Captain C. F. Dillon-Kelly, R.A.M.C. (temporary).
Captain H. H. Fairfax, R.A.M.C. (temporary).
Captain E. F. L. Nash, R.A.M.C.(S.R.).
Captain F. B. Ryan, R.A.M.C. (temporary).
Lieutenant A. S. Gariwal, I.M.S.
Lieutenant T. F. Ryan, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Cromie, W. H., LL.B., Captain, late R.E., son of the late Dr. Robert Cromie, J.P., of Clough, co. Down, died on January 1st.

Postlethwaite, Christopher J., Lieutenant Suffolk Regiment, son of Dr. Postlethwaite of Brenton, Devon, died in a casualty clearing station of wounds on January 9th.

Phillips, George Hugh, Flight Sub-Lieutenant, R.N.A.S., drowned on patrol service in Italy on January 7th, aged 18 years. He was the only son of Dr. Percy C. Phillips of Abridge, Essex, and joined the R.N.A.S. in April, 1917.

MEDICAL STUDENTS.

Cameron, Robert, Lieutenant Royal Flying Corps, killed recently, aged 22. He was the only surviving son of Archibald Cameron of Langside, Glasgow, and was a medical student at Glasgow until the beginning of the war. He got a commission in the Cameronians (Scottish Rifles) on April 29th, 1915, and subsequently transferred to the R.F.C.

Sprott, Douglas A., Lieutenant Border Regiment, died in Mesopotamia on January 4th from acute yellow atrophy of the liver, aged 24. He was the eldest son of Dr. Sprott of Appleby, and was educated at Bedford College and Edinburgh University, where he was studying for the medical profession; at the outbreak of the war he received a commission in the Border Regiment, and went to Burma in October, 1914, and as machine gun instructor travelled over India and Burma. Three months ago he was sent to Mesopotamia as second in command of a machine gun corps.

Many medical men in this country will desire to express to Dr. Henri Triboulet, the Paris physician through whom the visit of the French doctors to this country in 1908 was arranged, their sympathy with him in the loss of his son, a distinguished officer of the French Air Service. Adjutant Gilbert Triboulet had engaged in forty-eight air combats, had brought down three enemy airplanes and three captive balloons, and had received the Military Medal and the Croix de Guerre with four bars. He was killed on patrol duty on December 11th, 1917, aged 22.

[*We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.*]

HONOURS.

A SPECIAL supplement to the *London Gazette*, issued on January 9th, gave the following particulars of the acts of conspicuous gallantry and devotion to duty for which the decorations announced in our issue of October 6th, 1917, were awarded:

Bar to the Distinguished Service Order.

Major James Samuel Yeaman Rogers, D.S.O., R.A.M.C.

Throughout several days' operations he attended to the wounded in the open under continuous heavy fire. Though all his stretcher-bearers were casualties, with utter disregard of danger he bound up the wounded and superintended their removal. His gallantry was most marked. (D.S.O. gazetted January 14th, 1916.)

Distinguished Service Order.

Major (temporary Lieut.-Colonel) Edwin Charles Montgomery-Smith, R.A.M.C.

For conspicuous gallantry and devotion to duty in the supervision of the arrangements for the evacuation of the wounded. By a systematic study of the ground, clever selection of aid and relay posts and routes, he evacuated a large number of casualties during the operations. He worked untiringly, regardless of his personal safety, visiting all the advanced aid posts. His work was invaluable.

Captain (acting Lieut.-Colonel) John Darling Bowie, M.B., R.A.M.C.

He worked continuously for thirty-six hours under heavy shell fire, supervising the removal of the wounded from the front line, and by his energetic example and personal assistance all casualties were cleared within a short time after the operations were completed. His disregard of danger and untiring devotion to duty had a splendid effect upon his men.

Temporary Captain John Boyd Orr, M.C., M.B., R.A.M.C.

He worked unceasingly for forty-eight hours without an aid post and under an almost continuous barrage, attending to the wounded of three units of his brigade. He found time to visit the front line twice and attended to numerous cases under machine gun and shell fire, and, although twice buried and rendered unconscious for two

or three hours, he remained at duty until his brigade was relieved, displaying devotion and personal courage which were worthy of the highest praise. His gallant conduct has been brought to notice on more than one occasion by officers commanding units to whose w unded he had attended.

Temporary Captain David Lees, M.B., R.A.M.C.

He passed through an intense barrage in order to attend to the wounded who were lying exposed to heavy fire of every description. Single-handed and under heavy shelling, he dressed the wounds of an officer, a sergeant, and a private, and carried each of them in turn to a place of comparative safety. To do this he had to pass through the enemy's barrage no less than four times, but with complete disregard for his personal safety he went forward a fifth time to attend to others, inspiring all ranks by his own splendid example of fearlessness and devotion.

Temporary Captain Ivan Clarkson Maclean, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty in clearing the wounded. He took his stretcher-bearers well in advance of our forward positions and behaved with the most exemplary courage and devotion throughout, sparing no efforts to collect the wounded men. After his battalion was relieved he continued to work under the heaviest fire for another twenty-four hours, and was severely wounded on his way back after all the cases had been cleared. He set a splendid example of energy and contempt of danger.

Temporary Captain Hubert Arnold Pallant, M.C., R.A.M.C.

Hearing that a number of men belonging to another battalion were on the enemy bank of a river, and unable to cross it owing to the bridge being destroyed, and to their being apparently unable to swim, he hurried to the scene, swam the river fully clothed, and induced the men to enter the water and cross with the aid of a rope. The most exhausted one he personally conveyed across. During this time the enemy were continually shelling both the river and the banks. He set a splendid example of energy and devotion to duty.

Temporary Captain Gwilym David Watkins, R.A.M.C.

When cries for help were heard coming from a tank which had been abandoned in an isolated position in the outpost line he went two hundred yards through a heavy barrage and rescued a badly wounded man from the tank. He dressed his wounds and carried him under heavy fire towards safety, until, being completely exhausted, he was compelled to put the man in a shell hole and go for assistance. He returned with another officer, and, still under heavy fire, brought the man to safety. Thoughout six days he displayed the same indomitable courage and extraordinary devotion to duty, constantly going into the open, tending the wounded day and night. He undoubtedly saved many lives.

Bar to the Military Cross.

Captain William Barnsley Allen, V.C., M.C., R.A.M.C.

During an intense bombardment of a town with high explosive and gas shells, he left the advance dressing station to search for wounded men. Hearing that there were some in a remote part of the town, he proceeded there, collected them, and supervised their removal to the dressing station. On his return, hearing that a party under another officer had not come in, he was on the point of starting out again to look for them when they appeared. Although seriously gassed he continued to perform his duties with the greatest devotion and gallantry, until eventually evacuated to the casualty clearing station. (M.C. gazetted September 26th, 1916.)

Captain Hugh Roger Partridge, M.C., R.A.M.C.

During an intense bombardment of a town with high explosive and gas shells he led search parties into different parts of the town, collecting the wounded and placing them in a cellar, where he attended to them. Later, when the bombardment subsided, he superintended their removal to the advanced dressing station. On his return to the dressing station he continued to perform his duties, although his eyes were so swollen by gas that he was obliged to keep them open with his fingers. He undoubtedly saved several lives by his splendid devotion and total disregard of personal danger. He was eventually evacuated to the casualty clearing station. (M.C. gazetted October 20th, 1917.)

Captain John Dover Proud, M.C., R.A.M.C.(S.R.).

He worked for five days in charge of bearers practically without rest, personally assisting to evacuate stretcher cases under the heaviest shell fire, thus setting an example of gallantry and devotion to duty under most arduous circumstances. (M.C. gazetted June 18th, 1917.)

Temporary Captain Robert Inkerman Harris, M.C., M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty under exceptional circumstances. When his corps main dressing station was shelled on three separate occasions, whilst crowded with patients, he supervised and directed the collection and evacuation of the wounded to a place of safety. This was quickly done owing to his coolness, promptitude, and disregard of personal danger, which did away with all confusion and reduced the casualties to a minimum. (M.C. gazetted November 14th, 1916.)

Temporary Captain Wilfred McFarlane, M.C., M.B., R.A.M.C.

He carried on his work for five days under very heavy shell fire. His coolness under fire, his absolute disregard of danger, and his cheerfulness under all circumstances set a fine example to all ranks, and contributed greatly to the successful evacuation of the wounded. (M.C. gazetted December 11th, 1916.)

Temporary Lieutenant (temporary Captain) Lancelot Gerard Bourdillon, D.S.O., M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty on numerous occasions. He worked continuously for many days, organizing stretcher-bearers and forming relay posts. This work was carried out under very heavy artillery and machine gun fire, during which he showed an absolute disregard of personal danger and set a splendid example to all the officers and men employed on stretcher work. It was largely due to his devotion that many lives were saved. (M.C. gazetted January 14th, 1916.)

Military Cross.

Captain Cuthbert Delavel Shafto Agassiz, M.B., R.A.M.C.

He worked continuously for thirty hours organizing his stretcher-bearers and collecting wounded from an area which was being constantly and heavily shelled. On three distinct occasions he had to go through the hostile barrage in order to do this, and, although working the whole time over marshy and waterlogged ground, he kept such control over his men by his personal example of courage and coolness under most dangerous conditions that the wounded were successfully and rapidly evacuated

Captain Arthur Cyril Bateman, R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty in repeatedly going round the front line and attending to the wounded, who had been lying out in some cases for two days. Although continuously exposed to hostile sniping and machine gun fire, he displayed the utmost disregard of danger.

Captain Kenneth Biggs, R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty in leading and organizing his stretcher-bearers, under intense fire of every description, in such a manner that our wounded were rapidly evacuated. He worked unceasingly in the open for twenty-four hours, until he was severely wounded, by his admirable courage and determination saving many lives.

Captain Ribton Gore Blair, M.B., R.A.M.C.(S.R.).

When his battery was heavily shelled, and the detachment of one gun had been either killed or wounded, he immediately went to the emplacement and dressed the wounded under heavy fire. It was owing to his gallant and fearless conduct on this occasion that the lives of many men were saved.

Captain Francis Dawson Blandy, M.D., R.A.M.C.

He worked continuously for thirty-six hours under heavy shell fire and adverse conditions of weather, not only collecting the wounded of his own brigade, but also those of another, who were lying in an advanced position To do this he collected all the bearer parties that he could find, and personally led them to the spots under heavy shell fire. By his gallant conduct in going forward again and again, regardless of his personal safety, he undoubtedly saved many lives.

Captain Thomas Frederick Corkill, R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty when in charge of a forward bearer party. He worked continually for four days under heavy shell fire, evacuating the wounded and setting his men a magnificent example of courage and disregard of danger. He personally led parties beyond the advanced aid post to collect the wounded, and his great zeal and energy enabled him to overcome very serious transport difficulties.

Captain William Ernest FitzGerald, M.B., R.A.M.C.

In attending to wounded and gassed men during a heavy gas shell bombardment. To do so he had to remove his mask, although he knew the risk, and was badly gassed in consequence. Although suffering badly from the gas, he remained on duty until the following day, when he was ordered to the dressing station, having displayed magnificent pluck and devotion to duty.

Captain John Canute Gordon Glassford, Australian Army Medical Corps.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station He continued to work calmly for several hours under violent and accurate hostile fire, during which his dug-out was three times hit and considerably damaged. Throughout the operations he displayed a magnificent example of gallantry and devotion to duty and inspired all under him with a like disregard of personal risk. Much of his work was done in the open and under very trying and dangerous conditions, but the cheerfulness and imperturbability which he maintained in the face of danger were of the greatest assistance in the speedy evacuation of the wounded.

Captain Herbert Myer Goldstein, New Zealand Medical Corps.

For conspicuous gallantry and devotion to duty in establishing a forward aid post in our advanced lines over a mile in front of his regimental aid post. By his courageous decision to remain there in spite of heavy shelling, and his great gallantry and devotion in attending to the wounded, all the casualties were evacuated before the battalion was relieved.

Captain Gilbert William Rogers, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to the wounded under heavy shell fire. He personally supervised the evacuation of the wounded, and by his ability and utter disregard of his own personal safety was able to ensure the work being rapidly and successfully carried out. He set a splendid example to all ranks.

Captain James Ellis Rusby, R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty whilst acting as bearer officer during five days' heavy fighting. He led a party of stretcher-bearers through an intense artillery barrage, inspiring them and giving them courage by his own gallant and fearless example. Several of his men were wounded whilst passing through the barrage, and he stopped to dress them himself, although shells were falling all around. On many oecasions he attended the wounded in the open, although exposed to very heavy shelling, very greatly inspiring his men by his personal coolness and disregard of danger.

Captain Herbert Mather Spoor, R.A.M.C.

Under an intense hostile bombardment he dashed out of a cellar, where he was sheltering, and ran across the open to attend to two men who had been wounded in a dug-out. After attending to them, he noticed that the house he had just left was hit, whereupon he ran back again through heavy shell fire to see if his services were required. He displayed splendid gallantry and total disregard of his personal safety.

Captain Robert Alexander Stark, M.B., R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station under an intense bombardment. He worked steadily for over twelve hours, and, although seriously affected by gas, did not complain, until he finally collapsed from the effects, and was found lying on the ground. He personally supervised the clearing of a thousand cases, and it was largely due to his splendid self-sacrifice and devotion that the complete and successful evacuation of the casualties was effected.

Captain John Stephenson, R.A.M.C.(S.R.).

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers. He remained in charge of his sector for thirteen days, refusing to be relieved, although his bearers had to be reinforced and the aid post had to constantly change position owing to heavy shell fire. His personal example and gallant leadership were largely responsible for the way in which his bearers stuck to their duty.

(To be continued.)

MENTIONED IN DISPATCHES.

A special Supplement to the *London Gazette* issued on January 12th contains a list of officers, ladies, non-commissioned officers and men mentioned by General Sir Archibald Murray, K.C.B., late Commander-in-Chief Egyptian Expeditionary Force, in accordance with the concluding paragraph of his dispatch dated June 28th, for gallant or distinguished conduct in the field or for other valuable services. The following medical officers are included in the list:

Staff.

Colonels: R. M. Downes, A.A.M.C., H. T. Knaggs, C.M.G., A.M.S., R. H. Luce, C.B., F.R.C.S., V.D.(T.F.Res.), C. J. MacDonald, A.M.S.

Lieut.-Colonel (temporary Colonel) A. E. C. Keble, D.S.O., R.A.M.C.

Major (temporary Lieut.-Colonel) M. W. Cave, A.A.M.C.

Captain J. H. Wood, R.A.M.C.

Royal Army Medical Corps.

Lieut.-Colonel E. E. Powell.

Majors (temporary Lieut.-Colonels): R. J. Cahill, A. W. Moore, C. R. White.

Captain (temporary Major) W. W. Greer.

Captains: H. J. L. Barefoot, D. W. Berry, E. D. Gairdner, D.S.O., W. Goldie, H. F. G. Hall, E. B. Hinde, C. W. C. Myles, N. MacInnes, D. J. Marr, J. M. Mitchell, P. J. Moir, A. Rankine, A. B. Sloan, C. F. Searle.

Temporary Captains: R. R. Archibald, J. T. Bleasdell, O. Bruce, W. T. Collier, H. Coppock, H. S. de Boer, N. Duggan, J. W. C. Gunn, D. L. Hutton, J. M. Johnston, C. Loddiges, G. Wight.

Temporary Lieutenants: C. Speers, F. J. Waldmeier.

Special List.

Temporary Lieut.-Colonel L. P. Phillips.

Australian Army Medical Corps.

Lieut.-Colonel A. H. Thwaites.

Majors: W. Evans, W. R. C. Mainwaring, E. K. Parry.

New Zealand Medical Corps.

Lieut.-Colonel C. T. H. Newton.

Indian Subordinate Medical Department.

Subassistant Surgeons Kapar Karamchand, and Puroshottam Damodar Mahatekar.

The list also contains the names of 30 warrant, non-commissioned officers and privates of the R.A.M.C., 5 of the A.A.M.C., 1 of the N.Z.M.C., 2 of the I.S.M.D., as well as members of the nursing services.

ORDER OF THE BRITISH EMPIRE.

The name of Colonel Valentine Matthews, V.D., Inspector of Rest Houses, London District, was accidentally omitted from the list of appointments to be Commanders of the Order of the British Empire published last week, p. 67.

FOREIGN DECORATIONS.

Russian decorations have been awarded at various dates to the following medical officers for distinguished services rendered during the course of the campaign:

Order of St. Stanislas.—1st Class: Surgeon-General J. D. Edge, C.B., A.M.S. 2nd Class: Lieut.-Colonel W. W. O. Beveridge, C.B., D.S.O., R.A.M.C.; Temporary Major L. E. Owen, R.A.M.C. 3rd Class (with swords): Temporary Captain T. J. Kelly, M.C., R.A.M.C.

Order of St. Anne.—2nd Class (with swords): Acting Colonel H. Hewetson, D.S.O., R.A.M.C. 3rd Class: Temporary Captain A. H. Spicer, R.A.M.C.

England and Wales.

CHILD WELFARE AND A MINISTRY OF HEALTH.

ON January 9th the President of the Local Government Board received a deputation representing the local authorities of England and Wales, which urged that the powers affecting maternity and infant welfare administration now possessed by local authorities in Scotland and Ireland should be extended to England and Wales. It was explained that there was no objection to the proposal for a Ministry of Health, but that if a consolidation of the various Government departments concerned was to be developed into a central authority, this authority ought to be the Local Government Board. Mr. Hayes Fisher, in reply, noted that there was no difference of opinion as to the urgent necessity for saving infant life; it was merely a question of the order of going. Without prejudice to the larger question of setting up a Ministry of Health, he believed that a small bill giving the required powers could be passed without opposition. Many months must elapse before a measure establishing a Ministry of Health could reach the statute book and the organization of such a department could be developed. The Local Government Board was anxious to push forward the prevention and cure of disease, so that mothers might bring infants into the world without imperilling their own lives or those of their offspring. He believed that, building on the foundations of the Local Government Board, a central co-ordinating health authority could in time be systematized and developed. Dr. Addison, Minister of Reconstruction, who followed, stated that he had now got out a complete statement of the amazing number of Government departments concerned with health questions. The great need was for concentration and consolidation. With a single Minister in charge, the subject in which the deputation was interested would have a far better prospect of being considered on its merits. The Minister's duty would be to think out details of health policy and discuss them with representatives of the local bodies. It was inconceivable that a Ministry of Health could be formed that did not exercise nine-tenths of the functions of the Local Government Board; hence the Board must necessarily be the nucleus. In his opinion a brand-new Ministry was not needed. All that was wanted for the solution of the problem was a little common sense. Dr. Addison concluded by inviting the deputation to select a few of their number to discuss the matter with him.

In the *Times* of the following day appeared a letter from a group of ten members of Parliament, headed by Major Waldorf Astor, advocating the combination and reorganization of existing departments for the setting up of a Ministry of Health, and submitting the heads of a bill for the purpose. Their suggestion is that so soon as the new Ministry has been established by Parliament all the powers of the National Health Insurance Commissions for England and Wales, and all the powers of the Local Government Board should be transferred to it by Order in Council. In the same way the health functions of other departments would be taken over at such times as were found convenient. They propose also that there should be power to transfer from the new Ministry to other departments any functions transferred to it at first for the sake of convenience but found to be unsuitable for a Health Ministry to perform. In other words, the new Ministry would be simultaneously acquiring and shedding powers; this is a clumsy mode of proceeding, but the promoters advise it because they think that by this expedient matters of national health will be discussed on their merits undisturbed by the conflicting claims of rival authorities. Mr. Hayes Fisher immediately objected that such a measure would probably require a considerable amount of parliamentary time which might not be available in the coming session, and urged that a small bill to confer on local authorities the wider powers in regard to infant welfare, for which they unanimously asked, would stand a better chance; but he agreed that there was a good deal to be said in favour of bringing all health questions as far as practicable under one minister. Sir H. Kingsley Wood, of the London Insurance Committee, who has interested himself very much in the establishment of a Ministry of Health, read into the scheme of Major Astor and his friends the suggestion that they desired a Board of Health which would be able effectively to advise the Health Minister and to be a living link with local health administration; he showed himself very anxious to make it plain that such a Ministry would not mean the break up of the useful work of the county councils. His proposal he said would, in fact, concern central administration only, by unifying it, leaving the work of the local councils untouched and unimpaired. Then came Lord George Hamilton, who contended that the necessary preliminary to any local co-ordination of health powers is the abolition of the Poor Law guardians and their artificial areas of administration, and the transfer of their powers to the existing county or borough authorities. He argued that the Poor Law guardians are to a large extent entrusted with the care of the health of the poor, are solely in charge of the administration of the hospitals and infirmaries maintained out of the rates, and have a "singularly efficient staff, whose activities are hopelessly hampered by the existing prejudice against the organization to which they belong." The proposals he adumbrated have, he says, the unanimous approval of the Royal Commission upon the Poor Law, of which he was chairman, although there was difference of opinion as to the exact machinery to be substituted for the system they desired to abolish.

It is stated that the Local Government Subcommittee, of which we believe Sir Donald Maclean is chairman, of the

Committee of Reconstruction under the charge of Dr. Addison, has made a report recommending "the abolition of boards of guardians, a great reform of the Poor Law, and a rearrangement of the medical services of the country." The report, it is stated, was under the consideration of the Poor Law Association on January 17th.

THE LEEDS SCHOOL OF MEDICINE.

The Department of Physiology in the University of Leeds, so ably conducted by Professor de Burgh Birch until his recent retirement after more than thirty years' tenure of his chair, is now about to undergo extension. The work of the teachers of physiology has been divided: Dr. H. S. Raper becomes professor of physiology and biochemistry, and Dr. C. Lovatt Evans has been appointed to a new chair of experimental physiology, or, as it will probably be called, "experimental physiology and experimental pharmacology." It is becoming more and more evident that an increasing contribution to the progress of medicine and surgery is possible through a more detailed study of the chemical processes in health and disease, and the influence upon them of drugs and substances of known chemical composition. An example of this is furnished by the recent investigation of the antiseptic action of many substances containing active chlorine, which was undertaken early in the war by the department of organic chemistry of this university in conjunction with Dr. H. D. Dakin, F.R.S., a former student and member of the staff. These researches led to the introduction of chloramine-T and dichloramine-T, which are widely used in the treatment of war wounds. To carry out efficiently the new schemes increased accommodation will be necessary, chiefly in the form of additional laboratories for research. Considerable additions to the apparatus at present in the Department of Physiology must also be provided. The Council of the University has under consideration also a draft scheme for the extension of the teaching in pathology and bacteriology.

Professor Raper, after being a pupil of the Bradford Technical College, went to the University of Leeds as a student of science in 1899. He had a distinguished career, and during his tenure of an 1851 exhibition scholarship was engaged in research for two years at the Lister Institute and for one year at the University of Strassburg. He graduated M.B., Ch.B.Leeds in 1910, in which year he was appointed lecturer on pathological chemistry at the University of Toronto; in 1913 he became lecturer on physiological chemistry at Leeds. He is now on military service. Professor Lovatt Evans, who is also on military service, began work at Birmingham, but afterwards became a student at University College, London. In 1911 he was elected Sharpey scholar and assistant professor. He graduated D.Sc. in 1913 and took the diplomas of M.R.C.S., L.R.C.P. in 1916. In the previous year he had received the Schäfer prize at University College for the best research work during the three years 1911–14.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1917.

The Local Government Board announces that an Order has been made altering the Public Health (Tuberculosis) Regulations of 1912 and 1916 so as to provide that medical officers of health, instead of furnishing the Army Council with particulars of males between the ages of 16 and 45 years who have been notified as suffering from tuberculosis, shall in future furnish such particulars to the Chief Commissioner of Medical Services at the Ministry of National Service. The object of the Order is to assist the Ministry of National Service, which has taken over the duties of the Army Council with respect to enlistment into the army. The operation of the Order is limited to the duration of the present war. Notifications should be forwarded by post in a sealed envelope, which need not be stamped, and marked "O.H.M.S."

AN AMATEUR SYPHILOLOGIST.

At a meeting of the Denbighshire Insurance Committee, on January 2nd, of which a report appears in the *North Wales Guardian*, Dr. E. Moss, chairman of the Local Medical and Panel Committee, brought forward the following matter: Dr. Richard Evans, of Wrexham, attended last year a female patient whom he certified to be suffering from rheumatism. She was an insured person, and as such was reported by the sick visitor for being out late at night, for which offence her sickness benefit was suspended for a time. Subsequently she was seen by a woman supervisor of the approved society, who coolly reported "that the patient is supposed to be suffering from rheumatism, as appears on the medical certificate, but I find that she is suffering from syphilis." This amateur diagnostician gave the date at which symptoms of "syphilis" appeared, and added that she had examined the breast and upper arms of the patient. Meanwhile, Dr. Evans was attending the patient regularly. The approved society next asked a medical referee to see the insured person. The referee, who was furnished with a copy of the supervisor's report, examined the patient and formed the opinion that she was not suffering from syphilis, thus confirming the view taken by Dr. Evans. In the course of a long correspondence between Dr. Evans and the society the latter expressed regret, but offered no apology, nor any guarantee against the recurrence of such an incident. Indeed, they argued that if Dr. Evans had stated in his first certificate what he did in his later ones—namely, that the patient was also suffering from psoriasis, the whole trouble would have been avoided. Dr. Moss submitted that there was ample evidence to show that the supervisor had violated the spirit of the society's instructions, while the society itself was guilty of want of courtesy towards Dr. Evans. The chairman said the case was a very regrettable one, but for the time being the only thing for the Insurance Committee to do would be to refer the matter to the Welsh Insurance Commissioners. This was agreed to.

Ireland.

AT a meeting held at the Royal College of Surgeons on January 11th, when Mr. J. B. Story, vice-president of the College, was in the chair, a presentation was made by leading members of the medical profession in Dublin to Surgeon-General Sir Richard Ford, K.C.M.G., who has just relinquished the appointment of D.D.M.S. Irish Command. The presentation took the form of a replica of the famous Ardagh chalice. An address was read by the honorary secretary, and Sir Richard Ford replied. Lady Ford was presented with a silver chain bag and a blotter illuminated with the R.A.M.C. badge and other devices, the work of a wounded soldier in one of the Dublin hospitals.

GRADED SCALES OF SALARIES FOR POOR LAW MEDICAL OFFICERS.

Acting on the suggestions of the Local Government Board (Ireland) the Cork board of guardians has modified the scale of graded salaries it passed last August for Poor Law medical officers. The amended scale provides an initial salary for a dispensary medical officer of £175 a year, made up of £150 for dispensary duties and £25 for duties as medical officer of health for the district. There are annual increments of £4 until a maximum of £210 a year is reached in the salaries of dispensary doctors, and an increment of £1 annually until a maximum of £40 is reached in their salaries as medical officers of health of their dispensary districts. The present scale adopted by the Cork guardians is a very substantial improvement on the scale they fixed some dozen years ago.

The Mallow board of guardians has amended its scale, and now the initial salary is £140 a year for dispensary doctors, with triennial increments of £10 until a maximum of £200 a year is reached; the scale is made to apply retrospectively. On December 29th we mentioned that the Newcastle West (co. Limerick) board of guardians having rescinded, by a majority, a recent increase, the Poor Law medical officers at once sent in their resignations. The guardians have now resolved to offer an initial scale of £130 with triennial increments of £10 until a maximum of £180 is reached, the scale to apply retrospectively. This is undoubtedly a tribute to the vigorous action taken by the Newcastle doctors; it is, however, stated that they decline to accept the scale offered by the guardians until a further substantial improvement is made.

THE RED CROSS.

The result of the appeal made in September, 1915, by the *Irish Times* to raise £50,000 for the Red Cross has been gifts amounting on January 5th to £51,834. Very energetic means were taken to arouse interest in the fund. A house to house collection of copper and brass was made in Dublin, and a jewellery collection yielded £2,000. During the Christmas holidays all the Irish golf clubs had competitions, the proceeds of which were given to the fund, and collections were made in the churches on the first Sunday in 1917. All sections of the community have responded well, and it is hoped that when the fund is closed at the end of January it will amount to £60,000.

Correspondence.

THE VALUE OF THE SANATORIUM.

SIR,—Whilst the numerous letters, reports, and articles in the medical press were dealing with the question of the value of sanatorium treatment for the cases treated, the conclusions formed had their appropriate value; but when we find the field widened and these conclusions embodied in a statement dealing with the incidence of tuberculosis, it seems desirable to draw attention to the realities of the subject.

The problem of dealing with tuberculosis is many-sided, but, put briefly, the objects are to restore the health and working capacity of the affected person as far as possible, to limit infection and protect the general population. For these purposes many measures are necessary, and the first is to have adequate knowledge of the presence of disease. This is provided for by the tuberculosis notification order, and from the information gained in its observance all effective procedures must issue. Upon the action taken depends the efficacy of any scheme dealing with tuberculosis, and the provisions made should enable the tuberculosis officer to keep in touch with all the notified cases in a district, in order that he may direct the action referred to in such a way that the best interests of the patient and the community are served.

The success of a scheme depends upon the completeness with which this is effected. To those of us who were engaged in this work before the coming of the Insurance Act the provisions there made gave a welcome addition to this necessary control, and brought in the very valuable clinical information supplied by the panel practitioners. But there were unfortunate features of the campaign that preceded the passing of the bill, and a great deal too much was made of the sanatorium treatment clauses. Reckless statements, promises which were obviously impossible of fulfilment, and a general raising of hopes were to be noted as part of the political stock-in-trade of the time. There follows now a disappointment which is great in proportion to the ignorance which at the time allowed credence to be given to the statements. And, as some one has blundered, a movement is in danger of being discredited because it could not accomplish the impossible.

Why should it be sanatorium treatment that has failed? It is but an incident in the usual life-history of a case of tuberculosis. Why is it not dispensary treatment that has failed—or domiciliary treatment—under one or other of which most of the medical life of a patient is spent? Let us realize the true facts of the case. What has failed is public realization of the extent to which the country must be prepared to finance the campaign against tuberculosis if its elimination is desired. The nation must be prepared to provide conditions of housing and work that will not directly contribute to the contraction of tubercle. There must be colonies in which the afflicted persons, unfit for the rough-and-tumble of ordinary industry, may reside and work under the most ideal conditions, so that they become a source of production instead of a maintenance charge. There will have to be provided hospital accommodation for the advanced cases on a sufficiently generous scale to alter appreciably the present ratio of institutional to domiciliary deaths. And there should be sanatoriums to fulfil their main functions of inculcating the necessity of a disciplined life and starting the patient with early disease upon the road to recovery of his resisting powers.

These various elements in the campaign should be co-ordinated by an experienced tuberculosis officer who is in touch with the profession, public health office, and the charitable and hospital organizations of the area. Each unit of the scheme should have its true value given to it, and no one form of treatment need be played off against another. Each has its appropriate function to fulfil, each item is necessary, and progress will depend upon the extent to which the fullest use is made of every combative measure directed against those conditions which break down mankind's resisting power. The attempt to produce immunity need not limit our efforts to diminish the incidence of infection, and if tuberculization must go on, at least we can see to it that it shall not proceed in advance of a capacity for resistance.—I am, etc.,

Manchester, Jan. 5th. D. P. SUTHERLAND.

HOW IS THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS TO BE MADE?

SIR,—I think a very satisfactory answer to this question can be obtained from the "precipitin" test evolved by Carl Spengler of Davos. By means of this test, correctly interpreted, the following conclusions can be drawn:

1. Whether the patient is in a pretuberculous state or one likely to develop into phthisis.
2. Whether the patient is phthisical—that is, in a state in which the immunizing bodies in the blood are below safety.
3. If phthisical, whether the infection is due to the true bovine type of bacillus or the Koch (*brevis*) type.
4. A very good idea as to prognosis.

Subsequent tests are, of course, desirable, and enhance the value of any deductions made.

Another very important factor is the use of satisfactory methods of staining sputum, etc. By the ordinary Ziehl-Neelsen method bacilli are not infrequently missed. By Spengler's combined carbol-fuchsin and picric acid method, and by his structural method staining with osmic acid vapour much valuable information may be gained. Spengler has demonstrated that the tubercle bacillus is composed of a sheath, and contains granules which are stained black by the osmic acid method. When a case of tuberculous infection is doing well and the patient's blood is rich in immune bodies, the sheath is broken and these contained granules are set free as individual bodies, which he has termed *Splitter*. Furthermore, he has shown that these splitter bodies are capable, under suitable conditions, of developing into tubercle bacilli. From this it is obvious that the detection of their presence is a valuable aid both to prognosis and diagnosis.

It might be argued that when the bacilli are capable of being demonstrated in sputum the case is not an early one. This is true, but less true if the method used to detect them is superior to the commonest one in vogue at the present time. In any case it does not detract from the value of the precipitation test.

For the details of the technique in performing the test and the methods of staining, reference can be made to Spengler's own publication, *Tuberculose- und Syphilis-Arbeiten*, or to *I.K. Therapy*, by W. E. M. Armstrong, M.A., M.D.Dubl. (H. K. Lewis), or to *Tuberculosis and the Immune Substances Therapy*, by W. H. Fearis (John Murray).—I am, etc.,

Newick, Jan. 2nd. J. CHARSLEY MACKWOOD.

SIR,—I desire to add to Mr. E. D. D. Davis's letter in your issue of December 29th, 1917, the description of a method which I have adopted for some time, and which will appeal, I am sure, to him and to our fellow laryngologists.

In doubtful cases of laryngitis in which I have had suspicions of the condition being tuberculous I have frequently been able to procure immediately a satisfactory specimen of sputum by syringing a small quantity of a weak solution of sodium bicarbonate into the larynx and trachea with an intralaryngeal syringe. This may pass muster as merely "washing out the larynx." The patient then coughs vigorously, and in many cases can be induced to eject the liquid with a pellet of sputum into a basin. This proceeding is often invaluable in those not uncommon cases in which the secretion is inconsiderable and habitually swallowed by the patient instead of being coughed out. In these cases the patient, when asked to bring his morning sputum, produces as often as not a specimen of frothy saliva from the mouth. Again, in the case of very anxious patients the sputum may be obtained in this manner without their being alarmed by the suggestion of the possibility of tuberculosis.

More recently I have employed a simpler method. It consists in causing the patient to inhale the vapour of mustard oil. A few drops of strong aromatic oil of mustard are poured into an empty 6 or 8 oz. bottle. This may be corked up for about a minute to allow the vapour to fill the bottle, which may also be held for a few moments over a lamp. It is then uncorked, and the patient is instructed to take "a good sniff" of it. After one or more good sniffs he generally begins to cough, and may be induced to expectorate any secretion that may be present in the larynx or trachea. If no cough takes place, I think the probability of the existence of tubercle of the larynx at least is slight.

In several instances I have by these means been able to obtain fair specimens of sputum containing bacilli in which no physical signs of pulmonary tuberculosis were detectable, even in some in which the "morning sputum" was negative, being probably not a fair specimen.—I am, etc.,

London, W., Jan. 5th. DUNDAS GRANT.

THE PULSE PRESSURE TEST BEFORE OPERATIONS.

SIR,—I am sorry to see you give such prominence to "the pulse pressure test before operations" in the JOURNAL for January 5th, p. 26. Beyond supplying the force that causes the blood pressure the heart takes little part in the variations that occur, and the factors concerned in regulating the changes in blood pressure are so obscure that observations drawn from them are little better than guesswork. So many bogeys have been raised at one time or another about the heart being unable to stand anaesthetics that much confusion prevails, and the addition of this fallacious blood pressure claim cannot but add to the confusion.—I am, etc.,

London, W., Jan. 10th. J. MACKENZIE.

*** Sir James Mackenzie's opinion naturally carries great weight, but it does not appear from his letter whether or not he has read Cashman's article "On the pulse pressure test in pre-operative estimation of the reserve strength of the cardio-vascular system," which, in our humble opinion, justifies further investigation.

WAR NEPHRITIS.

SIR,—The letter by Captain Hendry in your issue of January 5th, p. 37, calls for comment. Trench fever and war nephritis have hitherto been regarded, on clinical and pathological grounds, as separate entities.

The term "trench fever" has been loosely applied to cases of pyrexia associated with a variety of symptoms of different etiology. What does Captain Hendry mean when he writes of trench fever?

We find his evidence as to the occurrence of nephritis in his series unconvincing. Profuse haematuria certainly can, and frequently does, occur in war nephritis without pre-existing trench fever. We have seen many cases of "P.U.O." in which the early provisional diagnosis of nephritis has had to be discarded on fuller inquiry. It is a common experience to find slight albuminuria, with the occurrence of a few blood corpuscles and endothelial cells, in the early stage of trench fever, and these may recur with each subsequent rise of temperature. In none of our cases, however, has there been any rise of blood pressure, dyspnoea, or any uraemic symptoms; in the absence of these, and in view of the transient nature of the albuminuria these cases cannot be regarded as nephritis. We are in agreement with Captain Hendry's statement that the cure of shin pains in most cases is slow; we are in complete disagreement with him when he suggests that the symptoms of trench fever and war nephritis are members of the symptom-group of one and the same disease.

It seems a pity that confusion should be introduced by the suggestion that these two diseases are related to each other—a suggestion for which, in our opinion, no satisfactory basis has yet been forthcoming.—We are, etc.,

C. E. SUNDELL,
Captain R.A.M.C.
A. T. NANKIVELL,
Captain R.A.M.C.

Stationary Hospital, B.E.F., January 10th.

VINCENT'S ANGINA AND PERIDENTAL GINGIVITIS.

SIR,—In their memorandum which appeared in the BRITISH MEDICAL JOURNAL for January 5th, Captains Eagleton, Mercer, and Hudson, of the Royal Army Medical Corps, express surprise that in the various articles on the prevalence of Vincent's angina, both amongst our overseas troops and amongst the home service units, they can find no mention of the condition of the gums in this infection.

May we be allowed to point out that this condition was very carefully and thoroughly described by us in a paper on "Fuso-spirillary peridental gingivitis," read before the Odontological Section of the Royal Society of Medicine on November 27th, 1916, and published in the *Proceedings* of the Society for that date? In this paper, also, the differential diagnosis of fuso-spirillary peridental gingivitis and pyorrhoea is discussed, much confusion having resulted from the laxity with which the term "pyorrhoea" has often been employed. We agree with Captains Eagleton, Mercer, and Hudson that these two conditions may coexist.

The connexion between Vincent's angina and this condition of the gums was fully dealt with in a further paper by us on "The relation of peridental gingivitis to Vincent's angina," read before the Laryngological Section of the Royal Society of Medicine on February 2nd, 1917, appearing in the *Proceedings* of the society and also in the BRITISH MEDICAL JOURNAL for March 31st, 1917.

How thoroughly Captains Eagleton, Mercer, and Hudson's experience confirms our previous findings is shown by the final paragraph of our second paper quoted above, in which we stated that "as the result of our investigations we suggest that when a patient complains of a sore throat which presents the characters of Vincent's angina it is essential to examine the tooth margins for evidence of peridental gingivitis or pyorrhoea, and that smears be made from both sources for the detection of the causal organisms. When found to be present, the peridental gingivitis should be adequately treated as well as the Vincent's angina, otherwise the condition is likely to persist indefinitely and to cause repeated recurrence of the sore throat."—We are, etc.,

FRANK E. TAYLOR, M.D., F.R.C.S., D.P.H.,
W. H. MCKINSTRY, M.D., D.P.H.,
Captain R.A.M.C.

MEDICAL STUDENTS IN AND OUT OF THE RANKS.

SIR,—I read with deep sympathy the letter of "J. A. A." in your issue of January 12th.

There are many such cases, my own son, a first year student at Cambridge, among them. Within a stone's throw of my house a fellow student, a pacifist, has just become qualified.

Cannot something be done for these lads who have so bravely borne the hardships and given so much for their country? Many showed great talent too.—I am, etc.,

January 15th. A PARENT.

The Services.

THE DIRECTOR-GENERALSHIP A.M.S.

RETIREMENT OF SIR ALFRED KEOGH, G.C.B.

THE Secretary of the War Office has issued the following communication:

"It is with great regret that the Secretary of State for War has decided that the time has come when Surgeon-General Sir Alfred Keogh, G.C.B., M.D., F.R.C.P., Director-General of Army Medical Services, must be permitted to resume his duties as General Executive Officer to the Imperial College of Science and Technology, and he will be replaced at the War Office from March 1st next by Colonel T. H. J. C. Goodwin, C.M.G., D.S.O., Royal Army Medical Corps, until recently the Assistant Director of Medical Services to the British Recruiting Mission in America, who will be appointed Acting Director-General of Army Medical Services.

"Sir Alfred Keogh's services were placed by the Governors of the Imperial College of Science and Technology at the disposal of the War Office at the beginning of the war, and although during the last three years they have on several occasions requested that he should return to his former duties owing to the development of matters of great national urgency which are delayed by his absence, it has not hitherto been possible to spare him.

"It is very largely due to Sir A. Keogh's intimate knowledge and grasp of all matters connected with the Army Medical Services and the medical profession generally that the medical needs of the army have been met to the fullest extent during the war, and he has been able to secure the assistance and advice of various committees of eminent consultants, which it is hoped will continue to be at the disposal of his successor."

Sir Alfred Keogh was born in 1857 and received his professional education at Queen's College, Cork, and Guy's

Hospital, London. He took the degrees of M.D. and M.S. at the Royal University of Ireland in 1878. After holding the appointment of house-physician at the Brompton Consumption Hospital he entered the medical department of the army in 1879, coming out second of nearly seventy successful candidates. This was the first batch of officers commissioned under the Warrant of 1879. For a considerable time before that the discontent in the service had been so acute that there had been the greatest difficulty in getting suitable men to come forward. At Netley Sir Alfred Keogh won the Martin Memorial Gold Medal and the Herbert Prize, and passed out with the highest total of marks of all the candidates—army, Indian, and naval. His first tour of foreign service was in Bermuda, whence he proceeded to India. On his return he was on duty at the Royal Arsenal, Woolwich, for five years; during that period he gained a large surgical experience. On completion of this appointment in the beginning of 1894 he was sent to India, where he served in the Madras Presidency; later he was transferred to Barrackpore, near Calcutta, where he was in charge of the Military Hospital. He was also civil surgeon there, and in that capacity had large opportunities of ordinary professional work among the operatives in the factories and civilian population. He returned to England in 1899, and in November went to South Africa as Secretary and Registrar of No. 3 General Hospital, which was at Rondebosch, near Capetown, in the early part of the war. When Bloemfontein was taken hospital accommodation was required on the lines of communication, and Colonel Keogh was sent to Springfontein with half of No. 3 General Hospital, and while there he was for a short time principal medical officer of the lines of communication from Bloemfontein to Norval's Pont.

He was soon transferred to Pretoria to take charge of No. 2 General Hospital, which he raised to a high state of efficiency. In November, 1900, it had 1,000 beds, and this number was maintained till the following March. He was also Senior Medical Officer of "Howitzer Camp," which included the Langman Hospital, and direction of the sanitation of the eastern outskirts of Pretoria. At the end of 1900 he contracted enteric fever, and was invalided home in February, 1901. He was mentioned in Lord Roberts's first dispatch, received the decoration of C.B., and was specially advanced from the lower to the higher rate of Lieutenant-Colonel.

When the reform of the Medical Service of the Army was undertaken, he was invited to join Mr. Brodrick's Reorganization Committee. His work as a member of that was of the highest value. He was appointed Deputy Director-General from January 1st, 1902.

On January 1st, 1905, he was appointed Director-General, and retained that office until 1910, when he was appointed Rector of the Imperial College of Science and Technology, South Kensington. During his first period of office as Director-General the medical service of the Territorial Force was organized, and the system of Territorial hospitals with staffs drawn from the civil hospitals in the various localities was brought into existence.

Colonel Goodwin is the son of Surgeon-Major J. Goodwin, A.M.S., and was born in Ceylon in 1871. He was educated at Newton College, Devon, and St. Mary's Hospital, London. He entered the Army Medical Service in 1893, passing out of Netley third of the batch. He served during the operations on the North-West Frontier of India in 1897 and was present during the operations against the Mohmands and in the action near Shabkadr, his services being rewarded by the D.S.O. He served with the British Expeditionary Force at Mons, the Marne, and Ypres; his services were three times mentioned in dispatches, and he received the C.M.G. in 1915. In the summer of that year he was the officer in command of No. 14 General Hospital at Wimereux. In May, 1917, he was appointed to accompany Mr. Balfour's mission to the United States of America as the representative of the Army Medical Department, where he has done much to facilitate the cordial co-operation between the medical profession in the United States and the British Army Medical Service.

THE late Dr. Thomas Tillyer Whipham left £26,192.

A NEW weekly medical journal has recently been established at Milan. It is entitled *Il Medico Italiano* and is to be the organ of the Union of Medical Men for National Resistance and of the Sanitary Association.

THE French Government has appointed M. Paul Strauss, Senator and Member of the Paris Academy of Medicine, president of the Superior Consultative Committee of the Health Service in the room of M. Louis Barthou.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee of this Fund was held on Monday, January 14th, at the offices of the *Lancet*, Sir Rickman Godlee presiding. Dr. Sprigge, the honorary secretary, reported that a letter signed by the Executive Committee, and including the letter from Mr. W. B. Poland, Director for Europe of the Commission for Relief in Belgium, had appeared in the medical and pharmaceutical journals in the last week of December (BRITISH MEDICAL JOURNAL, December 29th, p. 863). Arrangements were made to hold a meeting of the General Committee of the Fund at the house of the Royal Society of Medicine on January 31st at 3 p.m.; the propriety of subsequently calling a meeting of the whole constituency of the Fund was discussed, but a decision on this point was deferred until after the meeting of the General Committee. The importance of getting local committees to work, as was arranged when the appeal was first made, was pointed out by Dr. H. A. Des Vœux, the honorary treasurer, and Dr. C. O. Hawthorne.

Dr. Des Vœux made a financial statement which showed that there remained in the Fund now a total of only £1,096, while over a third of this sum had been received from the second appeal. The Committee felt that in those circumstances it would not be possible to send more than £400 to Belgium for the month of January, although they deeply regretted having in this manner to curtail the work which had been maintained without check for so long, and concerning whose great value to medical and pharmaceutical practitioners in Belgium they had received definite and pathetic proof.

SUBSCRIPTIONS.

The following subscriptions to the Fund have been received during the week ending Monday, January 14th:

	£	s.	d.		£	s.	d.
Dr. T. F. Keenan	1	0	0	Sir Rickman J. Godlee ..	34	8	0
Dr. N. J. McKie	1	1	0	Dr. A. S. Hedley	1	1	0
Mr. Alfred Wright ...	0	5	0	Dr. Allan	1	1	0
Dr A. Gordon Watson ...	1	1	0	Dr. E. L. Bunting... ...	2	2	0
Dr Annie E. Clark ...	2	2	0	Dr. Percy Kidd	5	0	0
Captain H. H. Taylor ...	5	0	0	Dr. Dawson Williams ...	5	5	0
Dr. W. J. Dewar	2	2	0	Dr. Elsie M. Chubb ...	2	2	0
Dr E. T. McDonnell ...	1	1	0	Dr. J. Quinton Bown ...	2	2	0
Sir Clifford Allbutt ...	5	0	0	A Friend	10	0	0
Dr. A. H. Peniston ...	1	1	0	Dr. S. Squire Sprigge ...	5	5	0
Dr. H. Simmons	2	2	0				

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

Obituary.

WILLIAM JULIUS MICKLE, M.D. TORONTO, F.R.C.P. LOND.

WE regret to announce the death of Dr. Julius Mickle after a protracted illness. He died at Ottawa in November last at the house of his sister, Mrs. Bell, with whom he lived during the last few years of his life.

Dr. Mickle was a graduate of Toronto, where he took the degree of M.D. in 1867; he had a distinguished career as a student in Canada; he then came to England, studied at St. Thomas's Hospital, and took the diplomas of M.R.C.S. and L.S.A. in 1869. Later he became assistant physician at the Derby and Warwick Asylums, and it was here that he first recognized the importance of syphilis in the production of organic disease of the nervous system. In 1879 he became a Member of the Royal College of Physicians; afterwards he was appointed medical superintendent of Grove Hall Asylum, Bow, E.

In 1876–77 he published a paper in the *British and Foreign Medico-Chirurgical Review* entitled Syphilis and Insanity. Subsequently he published a number of papers on general paralysis of the insane, and in 1886 the second edition of his work *General Paralysis of the Insane* appeared. It is by this book that Dr. Mickle's name will be most remembered, for he was one of the first in this country to point out the close relation between the incidence of general paralysis and syphilis. Evidently his work

attracted considerable attention in the profession, for he was elected to the Fellowship of the Royal College of Physicians in 1887, and the following year he delivered the Goulstonian Lectures, the subject being "Insanity in Relation to Aortic and Cardiac Diseases." In 1895 a valuable article on syphilis of the nervous system was contributed by Dr. Mickle to *Brain*, and not long after he was elected president of the Neurological Society. He published many other papers bearing upon mental diseases, of which he had a wide experience. For many years he lectured on mental disease at University College and at the Middlesex Hospital.

Dr. Mickle was a careful and reliable observer and he did not fail, as happens with some specialists, to see the obvious. His long association with the Neurological Society (at the meetings of which he was a regular attendant) showed his bent, as an alienist physician, was to seek where possible a material cause of mental disorders. The present advance in our knowledge regarding syphilis as the sole and essential cause of general paralysis shows that Dr. Mickle was a pioneer in recognizing the association between syphilitic lesions of the aorta and general paralysis.

For a long time he took an active interest in the work of the British Medical Association. He was a member of the Parliamentary Bills Committee and the organizer and director of the work of its Lunacy Laws Subcommittee. He had a very extensive and accurate acquaintance with lunacy laws and administration, and his assistance in dealing with questions of this nature was always readily placed at the disposal of the Subcommittee and of this JOURNAL. He was secretary of the Section of Psychology at the annual meeting in Liverpool in 1883 and vice-president at Glasgow in 1888. He was president of the section at the annual meeting in London in 1895 and again at the meeting in Toronto in 1906, when he was given the Hon. LL.D. of his Alma Mater.

Dr. Mickle retired about ten years ago; his health failed during the last few years, and as he had no close ties in England the writer advised him to return to Canada a few years ago, where he remained with his relations until his decease.

F. W. MOTT.

THE death occurred on January 14th, at Coatbridge, of Dr. CHARLES O'NEILL, Nationalist M.P. for South Armagh since 1909. Dr. O'Neill was born in 1849. He received his medical education at Glasgow University, where he graduated M.B., C.M., in 1892. From 1897 to 1899 he was assistant professor of botany at St. Mungo's College, Glasgow. He was J.P. for the County of Lanarkshire, and was for some years the senior magistrate at Coatsbridge. He was first returned as member for South Armagh at a by-election in November, 1909; he was re-elected unopposed in the following January, and held his seat at the next general election in December, 1910, thus being thrice elected for the same constituency within thirteen months.

COLONEL SIDNEY KEYWORTH RAY, Army Medical Staff (retired), died at West Kensington on January 2nd, aged 81. He took the diplomas of M.R.C.S. in 1858 and L.S.A. in 1859, and the F.R.C.S.Edin. in 1889. He entered the Army Medical Department as assistant surgeon on April 20th, 1859, became surgeon on April 20th, 1871, surgeon-major on March 1st, 1873, and retired as brigade surgeon on July 31st, 1891; but was promoted to colonel on October 18th, 1902, for services in England in connexion with the South African war. He served in the Egyptian war of 1882 and received the medal with a clasp and the Khedive's bronze star.

SURGEON-LIEUT.-COLONEL WILLIAM BENJAMIN CHATTERTON DEEBLE, R.A.M.C.(ret.), died at a nursing home at Ryde, Isle of Wight, on December 28th, 1917, aged 59. He was educated at St. Bartholomew's Hospital, took the diplomas of M.R.C.S. and L.R.C.P.Edin. in 1881, and entered the army as surgeon on February 3rd, 1883, becoming surgeon-lieut.-colonel on July 23rd, 1903, and retiring on September 27th, 1911. Most of his service was passed in the Household Brigade, as medical officer of the 1st Life Guards.

Universities and Colleges.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on December 19th, 1917. Sir Seymour Sharkey, M.D., F.R.C.P., has been appointed chairman of the Graham Legacy Committee for the remainder of the year 1917–18; Dr. A. E. Boycott, F.R.S., has been reappointed Director of the Laboratory, and Dr. C. Bolton acting Director during the absence of Dr. Boycott on military duty.

University Medal.—The University medal at the M.B., B.S. examination in October last has been awarded to A. E. P. Parker, of Westminster Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AT a quarterly council held on January 10th, when Colonel Charters Symonds was in the chair, the thanks of the Council were given to Colonel C. E. Shepherd for his gift to the Museum of a collection of otoliths of bony fishes and other gifts during the last eleven years, to Sir Robert Jones for presenting to the library a collection of the published works of the late Mr. H. O. Thomas, and to Sir Rickman Godlee for a copy of his biography of Lord Lister.

Surgeon-General Sir Anthony A. Bowlby, K.C.M.G., will deliver the Hunterian Oration in 1919.

The names of two members, previously erased from the *Medical Register*, were removed from the College list.

Medical News.

IT is proposed to make venereal diseases notifiable in Philadelphia.

CAPTAIN HENRY L. MARTYN, M.B., F.R.C.S., R.A.M.C., has been appointed one of the Surgeons-Apothecary to His Majesty's household at Windsor.

THE Carmarthen Town Council has decided to confer the freedom of the borough upon Captain Ernest Emrys Isaac, R.A.M.C., who has been awarded the Military Cross with a bar.

DR. CECIL P. LANKESTER (Guildford), secretary of the Surrey Branch of the British Medical Association, has been appointed an honorary associate of the Order of St. John of Jerusalem in England.

A PERUVIAN Medical Commission is making a tour of inspection of the schools of medicine in the United States with the object of collecting information to be used for the reorganization of the medical schools of Peru in accordance with American standards.

A COURSE of advanced lectures on infant care for nurses, health visitors, teachers, infant welfare workers, and mothers has been arranged by the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, and particulars can be obtained on application to the secretary, 4, Tavistock Square, London, W.C.1. The lectures, which will be given at the house of the Royal Society of Medicine, 1, Wimpole Street, begin on January 28th, at 5.30 p.m.

THE Local Government Board has issued a circular drawing attention to the revised arrangements for the provision of treatment for men discharged from the army and navy on account of tuberculosis. Hitherto accommodation has been found by the Insurance Commissioners, or by Insurance Committees, for insured men needing residential treatment; while in the case of uninsured men the Local Government Board has arranged for the provision of residential treatment for such as were not in the position to obtain this at their own expense. Under the provisions of the National Insurance Amending Act, 1917, the Insurance Commissioners, after consultation with the Ministry of Pensions and the Local Government Board, have made regulations extending sanatorium benefit to all invalided uninsured sailors and soldiers whose income from all sources does not exceed £160 a year. Uninsured officers, nurses, non-commissioned officers and men whose income exceeds that sum will be dealt with by the Ministry of Pensions. While county and county borough councils are now relieved of the duty of providing directly for the treatment of uninsured army and navy cases, it is anticipated that Insurance Committees generally will desire to arrange with the Councils of their areas for the provision of residential treatment for discharged sailors and soldiers suffering from tuberculosis. Steps are being taken to provide additional accommodation at convenient centres in different parts of the country. A further circular will be issued on the subject of home-visiting and after-care.

Letters, Notes, and Answers.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES.

RATIONS IN SANATORIUMS.

THE medical superintendent of a sanatorium for consumptives, finding it impossible adequately to feed patients suffering from tuberculosis on the proposed rations, asks whether any special provision is made in respect of sanatoriums.

*** The rations are voluntary, and there is not, we believe, any intention that patients should be strictly confined to them if that would mean that their successful treatment would be endangered. The special position of sanatoriums for consumption will, we understand, be brought before the Rationing Committee at an early date.

FINGER CRACKS.

A CORRESPONDENT asks advice as to the treatment of deep cracks in the skin of the ends of the fingers, which recur each winter and cause some disability.

*** The hard edges of really deep cracks should first be ground away with pumice stone, sandpaper, or a suitable file; if this be not done the dried hard epidermis prevents the more elastic layers underneath having free play, with the result that the hard edges cause the cracks to become deeper and therefore more painful. For immediate relief, when rough or dirty work has to be done, strips of Mead's plaster should be used. To attempt a permanent cure a stiff ointment is probably the best application. It should be applied at night, and gloves or finger-stalls worn. The ointment should be renewed as often as necessary during the day to keep the cracks well greased. Some years ago Dr. Alfred Eddowes suggested the following ointment, which has proved very useful: White beeswax 300 parts, gum arabic of good quality 350 parts, boiled in 300 parts of water; to this 50 parts of glycerin and 100 of water are added. The ointment should be quite stiff; for this purpose a little lanoline may be added and the proportion of water reduced.

TERRITORIAL DECORATION.

A CORRESPONDENT on active service with the British Expeditionary Force, having noticed the recent grant of Territorial Decorations to several medical officers, asks as to the conditions at present in force.

*** We find that the grant is governed by the following paragraph of Army Council Instructions, 1916 (p. 48):

> 782. Recommendations for the award of the Territorial Decoration for officers and . . . of the T.F. when serving with an expeditionary force will be held in abeyance during the war. In the case of officers . . . killed in action or who die of wounds, etc., the necessary recommendations will continue to be forwarded to the War Office in order that the decoration or medal may be issued to the next of kin.—68 Gen. No. 2731 (T.F.1).

EXCESS PROFITS DUTY.

J. W. inquires as to the position of a medical man who conducts a private hospital.

*** So much depends on the exact nature of the services for which payment is received that a definite answer cannot be given without more knowledge of the facts; it would depend on the consideration of evidence tending to show whether the profits arise from the successful organization and working of the hospital or from the professional exercise of our correspondent's personal skill. In view of the reference in the Acts to the criterion of the employment of capital we think that *prima facie* a hospital would be on a footing similar to that of a nursing home. We assume that the hospital in question is not merely ancillary to "J. W.'s" practice, in which case he would have stronger grounds for objecting to an assessment. The percentage charge has varied. For the first period of twelve months ending after August 4th, 1914, the rate is 50 per cent., then 60 per cent. to January 1st, 1917, when it becomes 80 per cent.

INCOME TAX.

"A MEMBER" inquires as to allowance for fire insurance and agent's charges from the assessment of rents on properties.

*** One-sixth is allowed from the gross rental value of the properties when they are assessed, and this has been held to cover the allowances claimed. But if the property concerned consists of lands or houses not exceeding £12 in gross rental value, a repayment can be claimed reducing the amount of tax to the sum due if the total expense of maintenance had been calculated on the average of the five previous years, and deducted from the rents. If the property in question consists of houses exceeding £12 in rental value our correspondent has no claim; otherwise he might request the local surveyor of taxes to send him a form of claim under Section 69 of the Finance (1909-10) Act, 1910, giving further information on the point.

LETTERS, NOTES, ETC.

ON WRITING WITH THE LEFT HAND.

DR. HEYWOOD SMITH (Hove) writes: Following Sir Frederick Treves's interesting review of Professor D'Urso's book (p. 16) I write to ask whether it would not be easier for some men to write backwards (mirror writing) with the left hand. In our ordinary writing with the right hand the majority of letters are formed by curves from right to left, and if we try and write backwards (that is, from right to left) with the right hand it takes some effort, and the result is rather that of of a child's writing; whereas if we write backwards with the left hand the curves are from left to right. If we write simultaneously with both hands, with the right as ordinarily and with the left backwards, this will be quite evident. Again, it is a curious fact, depending probably on unconscious brain work, that the backward writing by the left hand shows all the individual characteristics of the right hand writing, and can therefore be recognized as the writing of the individual. The left hand writing can be easily read in a mirror, or, if on thin paper, can be read by holding the paper up to the light.

*** If any one will make the experiment he will find that it is comparatively easy to write mirrorwise with the left hand. Sir James Barr has pointed out to us that a very practical way of utilizing mirror writing is to let the man write on thin paper, with under it an ordinary piece of typewriting carbon paper face upwards. When the top page is turned over, the writing, though done from right to left, appears in the correct way, from left to right. A curious fact is that if with the eyes shut a pencil is taken in either hand and curves made simultaneously, they will be found to be nearly symmetrical.

HONOURS AND REWARDS.

R.A.M.C. writes: I have been reading in the paper the curiously conglomerate list of names of those people who are included in the Order of the British Empire. I have been carrying on, doing my miniature bit, in a public service for three years, but I hope erelong to be enabled, at the termination of this great war, to return to my home and to my diminished practice, and the honours which I anticipate will be bestowed upon me, and on other general practitioners, will be the knowledge that in the unprinted list, in which will be included the comparatively few of those who have served their country, my name will appear.

It is apparent to me that those desirous of public decoration should have stayed in England, to have enjoyed their own home comforts, and to have posed before the grateful authorities as patriots who have not forsaken their native soil. For myself, contrary to the example set by a personal friend of mine, who has hitherto given his war service in the intervals of professional private practice, and has received so far two decorations from his thoughtful country, and has not deserted the London atmosphere, I find as one who has expended his personal energies at a very mature but healthy age in travelling more than 100,000 miles with our sick and wounded in various parts of the war zone, that the recognition of my services remains, and will doubtless remain, wrapt up in the bosom of my own family.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.